OCTOBER, 1963 • 50¢

AMERICAN Cinematographer

Magazine Of Motion Picture Photography And Production Techniques



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AMERICAN

Cinematographer

INTERNATIONAL JOURNAL OF MOTION PICTURE PHOTOGRAPHY AND PRODUCTION TECHNIQUES

OCTOBER, 1963 Vol 44, No 10

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ON THE COVER

ILLUSTRATIONS FROM four important articles in this issue Top, left skydivers adjust focus of camera lens prior to going aloft for filming skydiver antics in mid air Lower, left Ellsworth Fredericks, ASC, using camera finder, selects camera position for scene for Seven Days In May Top, right Designer cameraman producer Dick Moore demonstrates his remote controlled camera mounted atop plane for series of hazardous shots Lower, right Hal Rossan and camera crew prepare to shoot scene for Moral Re Armament s Miracle at Midnight

ARTHUR E. GAVIN, Editor

MARION HUTCHINS, Editorial Assistant

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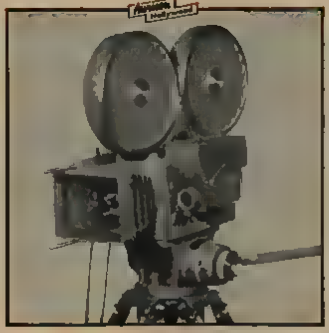
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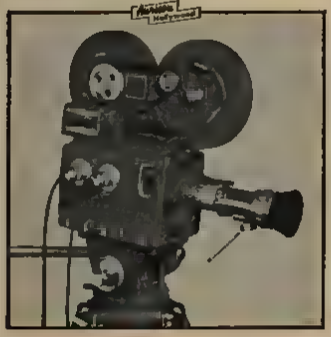
CINE-VOICE II 16 mm Optical Sound On Film Camera. ★ 100 ft. film capacity for 2¾ minutes of recording. 6 Volt DC Convertor or 115 Volt AC operation. ★ $967.00 (and up).



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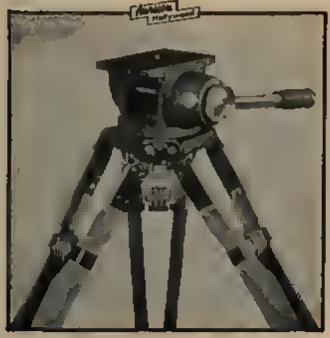
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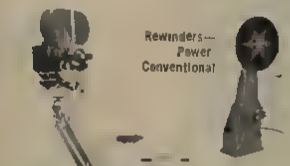


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INDUSTRY NEWS

News briefs of industry activities, products and progress



WHILE IN SPAIN recently to consult with Frank Capra on special effects work for "The Circus," Lin Dunn, ASC, President of Filmeffects of Hollywood visited the Roman Forum set for "Fall of the Roman Empire." Samuel Bronston production. Set is said to be one of the finest, most lavish ever constructed for a motion picture.

New Lens To Aid TV Commercials

A new concept in the motion picture lens has been researched and developed by the Fred A. Niles Communications Centers, Inc., and is now available for use at three Niles Studios in Chicago, New York, and Hollywood.

Called the "Swing Sweep Focus Lens," its primary ability is distorting and moving the focal plane for emphasis on a particular action or subject.

In announcing the innovation, Fred A. Niles, president of the firm whose research teams developed the lens said that this revolutionary technical achievement will contribute a new approach to the television commercial business.

Until now, in order to focus audience attention on a particular portion of the screen, the industry has had to rely solely on lighting, costly optical, or extensive special effects work. Not only is it now possible to literally soften, at will, controlled portions of the frame so as to direct attention to specific areas within the frame limits which remain in sharp focus, but a narrow plane of focus can be moved through a scene vertically, horizontally, or diagonally.

For example, in a cosmetic or other commercial, focus can be concentrated on an eye, an ear, or a lock of hair, to call attention to a copy point. Then, if the copy dictates, the focus can be moved from one point to another. This move can be accomplished with a static subject and a static camera. It is possible to sweep focus through a scene, like the beam of a searchlight.

Niles explained, "The new device literally enables the advertiser to control audience attention to the ultimate degree—to focus the public's vision on a package, on a demonstration or on the presentor, without background distractions during action scenes. Introduction of the lens adds a dimension to the motion picture filming technique—actually an extension to the art of motion picture photography. It is equally suited to filming in color and in black and white."

•

Karl Freund, ASC, Commended By Navy

Karl Freund, ASC, president of Photo Research Corp., Hollywood has been presented with a Department of Navy Letter of Commendation on behalf of Rear Admiral K. S. Masterson, Chief of the Navy's Bureau of Weapons.

Adm. Masterson said of Mr. Freund, "As a direct result of your efforts in the field of photometric and colorimetric instrumentation and measurements, the lighting of aircraft cockpit areas and instruments has been raised to a degree of sophistication not possible before. The benefits of your skill

Continued On Page 566



KARL FREUND, ASC (left) president of Photo Research Corp., accepts plaque-mounted letter of commendation from Commander Ken C. Scott.



***BOON 1. A welcome benefit; blessing.**
— Webster

The Lipsner-Smith ultra-sonic film cleaning machine was first introduced to the Hollywood motion picture industry by Consolidated Film Industries

Thru close user-manufacturer collaboration and under actual working conditions, CFI technicians helped develop the original machine to today's practical** and efficient machine. Now, ultra-sonic cleaning has become standard procedure for negative cleaning in film processing laboratories throughout the world.

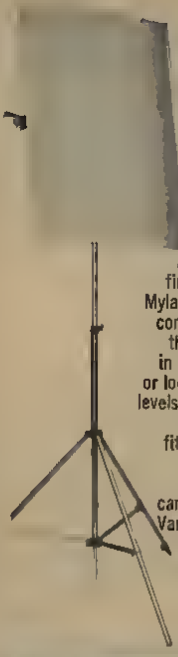
A famous first from CFI. One of many in its 40+ years of serving the film industry.

***STILL ANOTHER FIRST FROM CFI is the recent development of a solvent recovery system that further extends the use of ultra sonic cleaning.*

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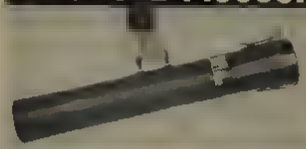


SUN REFLECTORS CHANGED FOREVER!

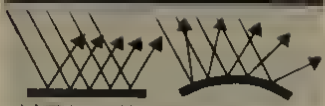
Truly portable, light weight unit has bright, even reflection pattern you can soften and spread out with finger operated lever Mylar and aluminum slat construction is rigid in the wind, yet rolls up in seconds for storage or location travel Stand levels on uneven ground supports 200 lbs, fits in 4x4 carry-case Scratch resistant reflecting surface can be washed "new" Vari-flector doubles as shadowless indoor "fill" Available in large (4x4) and small (2x2) sizes Pat Pend

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4x4 Vari-flector complete with stand and case (7"x42") ... $149 50
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2x2 stand mounting model ... $39 50
2x2 fibre carry-case (4"x24") ... $9 50

LOWEL-LIGHT

LOWEL-LIGHT PHOTO ENGNR 429 W54 ST NYC PAT PEND

INDUSTRY NEWS

Continued From Page 524

and knowledge accrue to all aircraft, whether military, commercial or private The importance of your work is too extensive for evaluation in a short letter."

The plaque-mounted letter was presented to Mr Freund by Commander Ken C. Scott, representing Rear Admiral Masterson. Freund had previously been awarded the Academy Oscar for cinematography, a Fellowship in the Society of Motion Picture and Television Engineers, and a Fellowship in the Photographic Society of America He is a member of the American Society of Cinematographers, the Screen Directors Guild, the Illuminating Engineering Society, and the U S. National Committee of the International Commission on Illumination

•

Charles Clarke, ASC, Addresses IFPA In S.F.

Charles G Clarke, ASC, formerly a director of photography with 20th Century-Fox studios, addressed the Northern California Chapter of the Industry Film Producers Association last month in San Francisco Some 55 members gathered at the Ansco headquarters to hear Mr. Clarke discuss cinematography as it applies to independent film production and answer IFPAers' queries in an extended question-and-answer period. Raymond Jaeger chairmanned the meeting which attracted west coast members from Seattle to San Diego.

Clarke is presently on the teaching staff of the Cinema Department of the University of California at Los Angeles

•

Film Editing Seminar In New York

From October 7th through the 11th, at the Henry Hudson Hotel in New York. The Camera Mart, Inc., will conduct its first annual Film Editing Workshop-Seminar. A group of prominent professional film editors have been lined up to participate as speakers and demonstrators

The Workshop-Seminar has been specially planned as an educational event for those engaged in industrial in-plant, college and government agency film production It will embrace all aspects of motion picture film editing, be augmented by technical demonstrations, equipment displays, and include workshop sessions on general film editing practice

The sessions will be open to all qualified industrial film production personnel, but applications should be made in advance to Mr Charles Lipow, General Manager, The Camera Mart, Inc, 1845 Broadway. New York 23. N. Y



SET LIGHTING efficiency of new ColorTran Focusing Quartz Light coupled with ColorTran's portable Colordyne electronic dimmer is tested by Hal Mohr. ASC Mohr, President of the American Society of Cinematographers is an active director of photography and vitally interested in all new developments in lighting and photographic equipment for motion picture production

•

Panacolor Process Debuts

The first showing of a feature-length motion picture in the new Panacolor film printing process took place last month when "The Castilian," produced by Sidney Pink for Warner Bros., was shown in Chicago in 52 local theatres

The Panacolor process is a patented color film printing method which, in a fully-automatic and continuous 3-stage printing and chemical process, produces color movie release prints on black-and-white positive stock

The process involves separating the colors of the negative into three positive color separations Black-and-white negatives are then made from these color separations and used to reproduce the color images on black-and-white stock Thus the colors are recombined by optical printing on a single black-and-white positive film stock to form an accurate reproduction of the original This printing step according to Panacolor, requires no printing dye Another advantage claimed for this optical method of printing is that it allows for instantaneous color correction of scenes without changing the basic and costly printing dyes. Since the colors are reproduced separately, each is individually controlled and great flexibility can be obtained.

Continued On Page 568

ARRIFLEX at work — ONE OF A SERIES*



OFFSET PERISCOPE FINDER FOR ARRIFLEX CAMERA PROVED INVALUABLE COMPOSING SCENES WHERE UPSIDE DOWN CAR IS RIGHT SIDE UP AND THE SCENE ITSELF IS UPSIDE DOWN

ARRIFLEX® covers every angle in upside-down film!

The adaptable Arriflex is no stranger to unusual assignments and photographing an automobile being driven into a service station **upside down** was one of them! This strange procedure was required for "Look at It This Way," an industrial film produced by Video Films, Detroit, for The Walker Marketing Corporation of Racine, Wisconsin. Employing a variety of "magical" effects, the presentation called for a trained magician in the lead role. Aimed at increasing muffler sales to mechanically-minded audiences, the picture was developed through honest ingenuity — rather than relying on obvious optical effects and other trick shots. Director Paul Lohman relied heavily on Arriflex's famed versatility in the production of this unusual film.

The specially-built car was often inverted, riding on three concealed wheels in the roof. When the script called for the car to be right side up and the scene itself reversed, the Arriflex mirror reflex viewfinder proved invaluable in framing the scene. Its light weight and compact design permitted fastening the camera to a hi-hat and pan-head mounted at right angles to the tripod head, for 180° revolution on the lens axis. And all through a prolonged schedule confronted by taxing situations, Arriflex completed this unusually complex film without a hitch! Topsy-turvy or right side up — hand held, rigidly clamped or rotating in all directions — Arriflex made "magic" with its usual stellar performance — in studio or on location, it will do the same for you!



From the microscope to the missile range... from spot locations to sound stages... Arriflex professional motion picture cameras are the dominant choice of filmmakers in science, industry, and entertainment. They're lightweight, rugged, tremendously versatile — uniquely suited to a range of applications virtually without limits. Here are some of the features that give Arriflex cameras their remarkable capabilities.

• MIRROR-SHUTTER REFLEX VIEWFINDER • REGISTRATION-PIN FILM MOVEMENT • 21°-DIVERGENCE 3-LENS TURRET • CONTOUR HAND GRIP • FRAMES-PER-SECOND TACHOMETER • COMPLETE ACCESSORY SYSTEM... lenses, standard and special-purpose electric drives, power supplies, time-lapse equipment, film magazines, sound blimps, tripods.



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Entirely new! Ideal for zoom movies, wide-angle or telephoto! Compact, lightweight, cool, holds any camera. Replaceable long-life lamp; 16 hours (8 each filament). Head is adjustable up to 90° bounce. With camera mounting bracket.

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INDUSTRY NEWS

Continued From Page 566



ACTOR SEX HARRISON (center) has a good luck hand shake for University of California graduate student William Marks (left), winner of the 1963-64 Cukor Fellowship Award given by screen director George Cukor (right)

Cukor Fellowship Awarded

William Marks of Los Angeles last month was named winner of the 1963-64 George Cukor Fellowship for graduate study in Cinema Arts and Sciences at the University of Southern California. The $1,750 fellowship provides tuition, fees and other costs for a year's study leading to a master's degree in any field of Cinema. Marks was chosen by faculty vote.

Marks looks to a career in film production, direction and writing. He will produce a film as part of the year's work being financed by the Cukor Fellowship. He is the fifth beneficiary of the Cukor Fellowship Fund established at USC in 1959 by screen director George Cukor, who has made 48 films during his 34 years in the industry. He is presently directing "My Fair Lady" at Warner Brothers studio.

■

Museum Groundbreaking

The Hollywood Museum of motion picture television, radio and recording arts, which has been a year in the planning, will start on the long road to reality with official ground breaking ceremonies October 20th.

Jack L. Warner and Walt Disney, co-chairmen for the Museum's ground breaking ceremonies, will be attended by an assemblage of stars from the four industries.

■

Movielab Adds Xenon Lamp To Projection System

The private screening theatre operated by Movielab, Inc., New York City, provides one of the widest ranges of projection methods in the industry. The screening room is equipped for every kind of 35mm and 16mm projection in regular, wide-screen and anamorphic systems, TV apertures, 3 D and even side-by-side screening—plus interlocking of from one to six optical or magnetic sound tracks at one time. The laboratory also leases to its customers cutting and editing rooms, also film and tape storage vaults. Located at 619 West 54th Street, the theatre operates both day and night and on Saturdays, Sundays and holidays.

■

SMPTE's 94th Semi-annual Conclave October 13th

The 94th SMPTE Technical Conference and Equipment Exhibit will take place at the Somerset Hotel in Boston October 13th to 18th inclusive. Papers will be presented on a wide range of subjects during the five day conclave, including such topics as Photography in Medicine, 8mm and Small Format Films, Instrumentation and High-Speed photography, Film Laboratory Practices, Motion Pictures and TV in Education, Sound Recording, Space Technology, and Short Subjects Films.

■

Kodak Opens Larger Facilities In Chicago

The Midwest Division of Eastman Kodak Company's motion picture product sales department moved last month to larger quarters on the 8th floor of Chicago's Prudential Building located at 130 East Randolph Street. The company formerly occupied quarters on the 20th floor.

Kodak's Midwest Division is responsible for sales of Eastman professional motion picture films throughout the midwestern states. It also provides engineering consultation for the motion picture and television industry, business and governmental agencies, educational institutions, and other organizations that use motion pictures professionally.

Other service functions are also undertaken. The new chemistry laboratory, for example, will aid film processors in the establishment of quality controls, testing practices and inspection procedures.

■

Sid Solow To Instruct College Students In Cinema

Sidney P. Solow, vice-president and general manager of Consolidated Film Industries, Hollywood, last month started his seventh year as an instructor at the University of Southern California. Solow's course, titled "Motion Picture Processing," is part of the regular curriculum of the University's Department of Cinema. ■



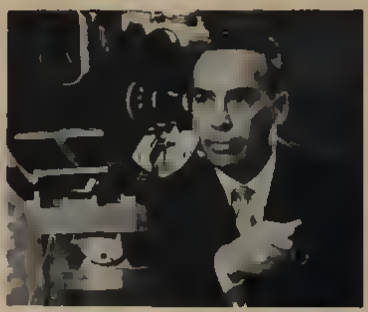
Du Pont SUPERIOR* 2

Bernard Dresner's Choice for Important Assignments

On-location assignments took award-winning cinematographer Bernard M. Dresner more than 62,000 miles in the last 12 months. They carried him around the world and from the Arctic wastes of Greenland to the jungles of Colombia, South America. Here's what he has to say about his constant companion, Du Pont SUPERIOR 2.

"In the Arctic I needed a wide latitude film that would give me continuous telecast quality against the glare of ice and snow. Wide-range SUPERIOR 2 filled this need perfectly—even on tricky close-up shots involving flesh tones against walls of ice.

"In the Tropics—humidity 98%, temperature 110 degrees—I needed a film with a heat stable emulsion, good gray scale and



Cinematographer Bernard M. Dresner (foregrou
on location in Greenland using SUPERIOR 2
film the CBS "The Twentieth Century" progra
"City Under the Ice."

mildew resistance. Again, SUPERIOR 2 proved its reliability by performing perfectly at all times."

Some of the recent awards won or shared in by Mr. Dresner are the Grand Prix (travelogue category) at the Cannes Film Festiv
the Peabody Award, the Blakeslee Awa
the Trans World Airlines Writing and P
ture Award and the Emmy Award.

Oresner used Du Pont motion pictu
film for each of his prize-winning effo
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DU PONT

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Film Festival NEWS

San Francisco

The seventh annual San Francisco International Film Festival will be held in that California city from October 30th through November 12. 1963 There will be five individual competitions: 35mm Feature Films. 35mm Short Subjects, 35mm Newsreels, 16mm film As Art (Experimental films which make an original contribution as a creative medium), and 16mm film as Communication (Non-theatrical films produced with a specific purpose and defined audience.)

The Festival will be held at San Francisco's Metro Theatre where it is expected that some 25 feature-length films from various European and Asian countries will be entered in competition

Six major awards wil be presented during the Festival: the Golden Gate Award given annually to the best actor, best actress, best picture, best director, best supporting actor and actress as well as numerous other awards in the technical and creative categories

For further information, entry blanks etc., write Information Center, San Francisco International Film Festival. 172 Golden Gate Avenue, San Francisco 2, Calif

•

New York

The deadline for entry of TV commercials in the International Film Festival of New York, scheduled from October 8th through the 10th at the Barbizon-Plaza Hotel ended September 23rd Information regarding this Festival can be obtained from Industrial Exhibitions, Inc. 17 East 45th St, New York 17, N. Y.

•

Hollywood

The Fourth International Broadcasting Awards competition, sponsored by the Hollywood Advertising Club has been announced and the deadline for entries set for December 1, 1963 The awards will be presented at the Hollywood Palladium February 25 1964

The awards will honor the best television and radio commercials produced anywhere in the world and broadcast between December 1, 1962 and the same date in 1963

This year's awards will be given in 14 television categories and Sweepstakes trophies presented makers of the best commercials from among the category winners. Special tropby awards will also be made for the best use of color and music in TV commercials.

For information write to Hollywood Advertising Club. International Broadcasting Awards, 6362 Hollywood Blvd, Hollywood 28. Calif

•

Barcelona

The 5th Congreso Internacional Cinematografico De Barcelona will be held in Barcelona, Spain, at the Nations Palace October 11 to 18th, 1963 The festival will make awards in two categories. 35mm Color Features and Short Subjects in Color. For information write to V Congreso Internacional Cinematografico. Ayuntamiento de Barcelona, Avda. Puerta del Angel 8, Barcelona 2. Spain

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Q & A

Technical Questions and Answers

Q.—*My next assignment calls for some extensive high altitude aerial photography—something I have never attempted before. I anticipate there will be problems resulting from aerial haze, etc. Please give me some helpful information in this respect. I will be shooting both panchromatic and Eastman Color film.* A. E. D., Philadelphia, Pa.

A.—At high altitudes, aerial haze becomes a problem. Methods of counteracting this haze will vary, depending on whether color or black-and-white film is being used. First, consider the use of haze-cutting filters for black and white film. The higher the altitude, the more harmful is the effect of haze and, accordingly, the denser your filter must be. Exposure, therefore, will also vary according to filter used.

Aerial views from high altitudes are often veiled by water vapor in the atmosphere, though this is not always visible to the eye. If the haze is visible it will appear bluish, and should not be confused with smoke, dust, or fog. Smoke and dust are solid particles. Fog is made up of millions of tiny water particles (not water vapor) and these particles cannot be penetrated by the use of haze-cutting filters.

Haze has the effect of reflecting and scattering light of the shorter wave lengths (ultra-violet and blue light). Since all black-and-white films are sensitive to light of the shorter wave lengths, this extremely actinic light (full of radiant energy) will be recorded to produce a milky appearing veil over the scene if no filter is used. The veiling of the image becomes more pronounced as altitude of the plane is increased, or if the plane-to-target distance is increased as in high obliques.

Aerial photography with color film does not permit a wide selection of haze-cutting filters. You can use a U.V. filter in conjunction with Daylight Kodachrome. The Type A conversion filter (Wratten #85) used with Type A. Kodachrome screens out much of the haze and gives very satisfactory results.

Q.—*Having recently acquired an Arriflex 16mm camera I have been able to observe more directly the difference in pictorial results which lenses of different focal length give—thanks to the ability to view scenes through the camera's reflex finder.*

Unfortunately, my lens equipment at this stage is limited to two—a 25mm and a 12.5 wide-angle. If I acquire additional lenses, it will be to achieve different aspects in perspective. But where do I learn about perspective and about which lenses do what in this respect? Can you recommend a book on

Continued On Page 574

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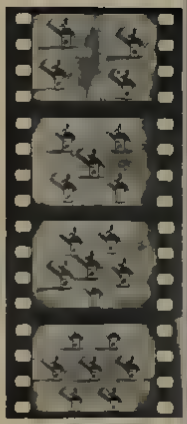
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QUESTIONS & ANSWERS

Continued From Page 572

this subject?—J. J. Van A, Duluth, Minn.

A.— We know of no book devoted solely to this subject. Perspective is something usually discussed as a part of cinematography as a whole and it is important to know how to control it —which means, of course, using the right lens to achieve the desired result.

How to control perspective is one of the more important technical assets of the professional cinematographer. To the eye, the illusion of perspective depends upon the obvious convergence of parallel lines, the comparative scale of familiar objects, the required adjustments of the eye, the effects of binocular vision, and various subjective impressions. In photography, the lens-to-subject distance, independent of focal length or aperture, controls the basic perspective effect.

From a given camera position a short focal length lens will take in more of a scene or set than a so-called standard lens or lenses of longer focal length. The amount of picture area included in the scene or composition is inversely proportional to the focal length of the lens.

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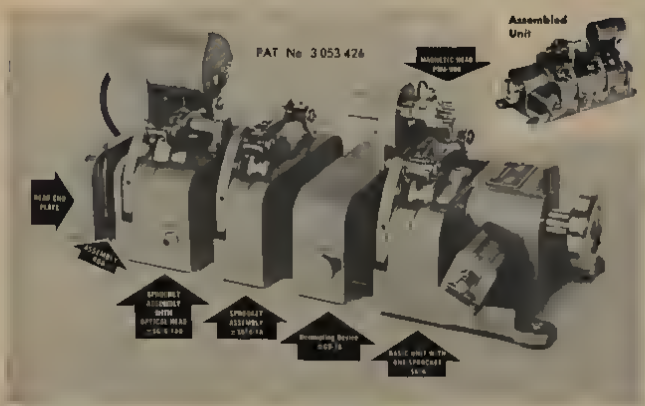
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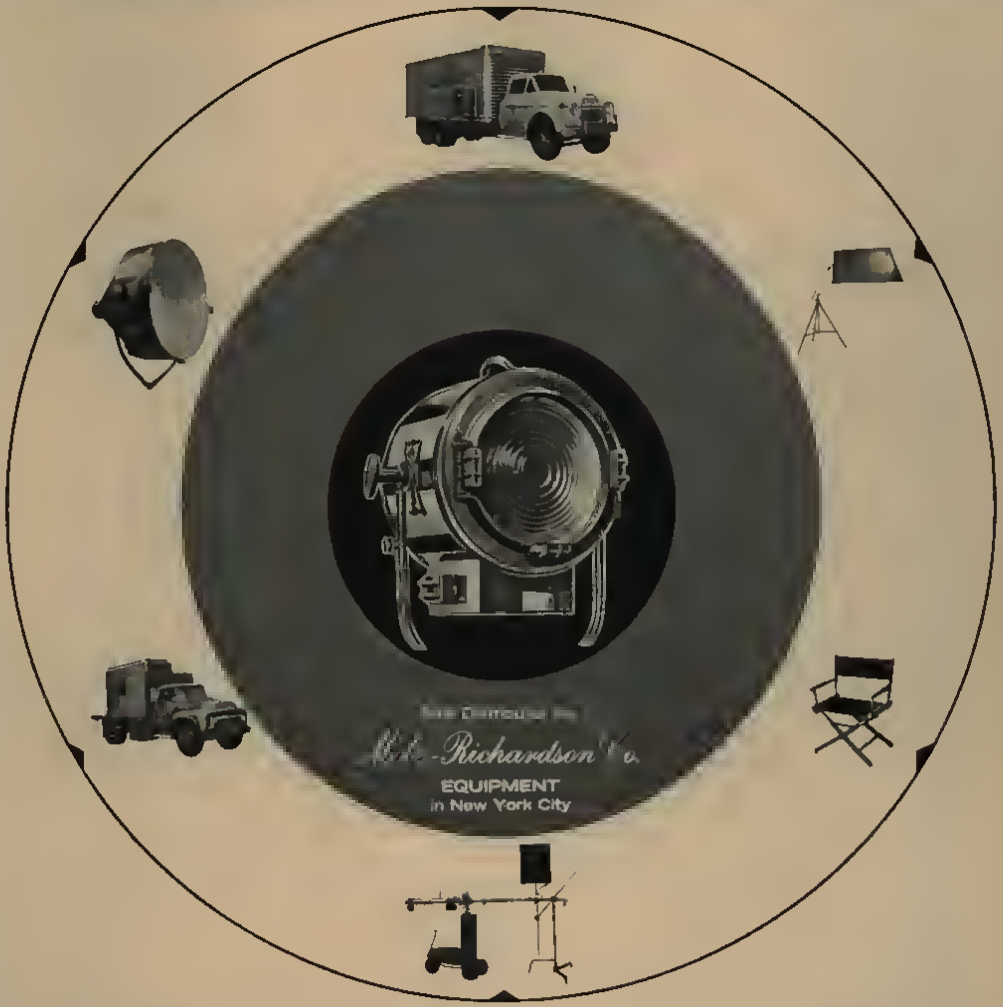
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WHAT THE INDUSTRY'S CAMERAMEN WERE SHOOTING LAST MONTH

BY HARRISON HUTCHINS

NOTE: Asterisks following titles indicate television film productions

ABC N.Y.

HENRY JAVINSKY, BERT GARBARO, "ABC Documentary"*

ALLIED ARTISTS

PHILIP LATHROP, ASC, "Soldier in the Rain" (Blake Edwards Prod.) with Jackie Gleason and Steve McQueen. Ralph Nelson, director

DAVIS BOULTON, "Never Put it in Writing" (Seven Arts Prod., shooting in Dublin) with Pat Boone and Fidelma Murphy. Andrew Stone, director

JACK MARQUETTE, "The Strangler" (Bischoff Diamond Prod.) with Victor Buono and Diane Sayer. David Diamond, director

AMERICAN INTERNATIONAL

FLOYD CROSBY, ASC, "The Comedy of Terrors" (J. H. Nicholson-S. Z. Arkoff Prod.; P'Vision) with Vincent Price and Peter Lorre. Anthony Carras, director

BIOGRAPH STUDIOS—New York

JOHN S. PRIESTLY, "East Side, West Side"*

CASCADE STUDIOS

WINTON HOCH, ASC, Commercials*

HENRY FREULICH, ASC, Commercials*

CBS—N.Y.

CHARLES MACK, LEO ROSSI, ROBERT CLEMENTS, "CBS Reports"*.

MIKE ZINGALE, ERNIE NUKANEN, "Candid Camera"*

GEORGE JACOBSON, BERNARD DRESNER, "Twentieth Century"*

COLUMBIA STUDIOS

OSWALD MORRIS, "The Pumpkin Eater" (Romulus Prod., shooting in England) with Anne Bancroft and Peter Finch. Jack Clayton, director

GILBERT ANDERSEN, ASC, "Donna Reed Show"*

CHARLES WEIBORN, MONROE ASKINS, "Rango"*

JACK MARTA, "Route 66"*

MALBY GERTSMAN, ASC, Commercials*

RICHARD CUNHA, Commercials*

FRANK PARKER, "Whistle Your Way Back Home" (Hanna-Barbera Prods., feature cartoon color) William Hanna, producer-director

FRED GATELY, ASC, "Farmers Daughter"*

BURNETT GUFFEY, ASC, Commercials*

WALTER LASSALLY, "Psyche 59" (Troy Schenck International Prod., shooting in England) with Curt Jurgens and Patricia Neal. Alexander Singer, director

ROBERT WYCOFF, "Grandl"*.

JEAN BADAL, "Behold a Pale Horse" (Fred Zinnemann Prod., shooting in France) with Gregory Peck and Anthony Quinn. Fred Zinnemann, producer-director

DESILU—Cahuenga

ROBERT DEGRASSE, ASC, "Danny Thomas Show"*, "Dick VanDyke Show"*

HENRY CRONJAGER, "The Joey Bishop Show"*, "The Bill Dana Show"*

FRANK CARSON, "My Favorite Martian"*

SID HICKOX, ASC, "Andy Griffith Show"*

DESILU—Culver City

GLEN MACWILLIAMS, ASC, "Glynis"*

CHARLES STRAUMER, ASC, "The Greatest Show on Earth"*.

DESILU—Gower

TED VOIGTLANDER, ASC, "Ben Casey"*

ROBERT PLANCK, ASC, "My Three Sons"*.

ROBERT HAUSER, ASC, "The Breaking Point"*.

EDWARD FITZGERALD, ASC, "Lassie"*

Continued On Page 614

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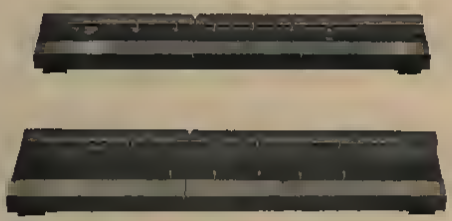
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A-and-B Editing

The Movielab Guide to A-and-B Editing is title of 14-page booklet available free from Movielab, 619 West 54th Street, New York 19, N. Y. The booklet was designed to aid Movielab's customers and prospective customers to prepare their films in A and B rolls for printing in the way that will facilitate handling and insure the best results in the final finished product.

The procedure of A and B printing is described followed by general instructions for both 16mm and 35mm films.

8mm Sound Movies

An informative tabloid newspaper devoted to the production of 8mm sound films is published quarterly by Fairchild Camera and Instrument Corp., 580 Midland Ave., Yonkers, N. Y. Title of publication is "Fairchild Sound Movie Maker," and is distributed free to readers of *American Cinematographer* on request.

The first issue carried helpful hints on 8mm sound editing and mixing, the construction of an inexpensive sound chamber and tips on recording procedures.

Color Identifications

There has long been a need in industry and science, including film laboratories, for a precise means of classifying and identifying colors. The U. S. Department of Commerce National Bureau of Standards in Washington, D.C., offers an 8-page booklet entitled *Coordinated Color Identifications for Industry*, by Kenneth L. Kelly. The booklet, or technical note as it is termed, describes a method of coordinating the five levels of fineness of color designation which was developed by the Inter-Society Color Council Subcommittee for Problem 23, The Expression of Historical Color Usage. It is based on the ISC-NBS method of designating colors and lists the methods for changing from one level to another. The publication also gives examples for the use of each level.

Order from the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D. C. Price is 15¢ per copy. (Foreign remittances must be in U.S. exchange and should include an additional one-fourth of the publication price to cover mailing costs.)

Booklet On Kilfitt Lenses

The fourth edition of a comprehensive booklet on Kilfitt lenses and accessories is announced by Kling Photo Corporation, 257 Park Avenue South, New York 10, N. Y.

Extensively revised, the new edition contains latest technical and descriptive information about all Kilfitt products, including recent changes and additions. The 16 page, 2-color booklet also includes technical details of the 40mm and 90m Makro-Kilar lenses, the 35mm to 600mm long Kilar lenses, etc. Copies of booklet can be obtained by sending 25¢ for postage and handling to Kling Photo Corp. at above address.

Tape Timing Chart

Saxitone Tape Sales will mail free, upon request, a copy of their recently compiled tape playing chart. Every conceivable footage has been calculated from 2½ inch reels up to 14-inch reels and of speeds ranging from 15/16 inches per second to 15 ips. The chart data is applicable to both dual-track and quarter-tape tracks. Write Saxitone Tape Sales, 1776 Columbia Road, N.W., Washington, D. C.

ASA Screen Luminance Standard

The American Standard Association has developed a new American Standard which spells out screen luminance and viewing conditions for 35mm review rooms. One of over a hundred developed for motion pictures, this new Standard gives film producers and distributors a benchmark for measuring the brightness of projection screens in review theatres, viewing conditions and means for eliminating stray light. An appendix offers suggestions relative to normal prints for indoor as well as drive-in theatre projection, stray light and theatrical projection.

Titled "American Standard Screen Luminance and Viewing Conditions for 35mm Review Rooms, PH.22.133 1963," copies are available at 50 cents each from the ASA, Room 906, 10 East 40th St., New York 16, N. Y.

Continued On Page 584

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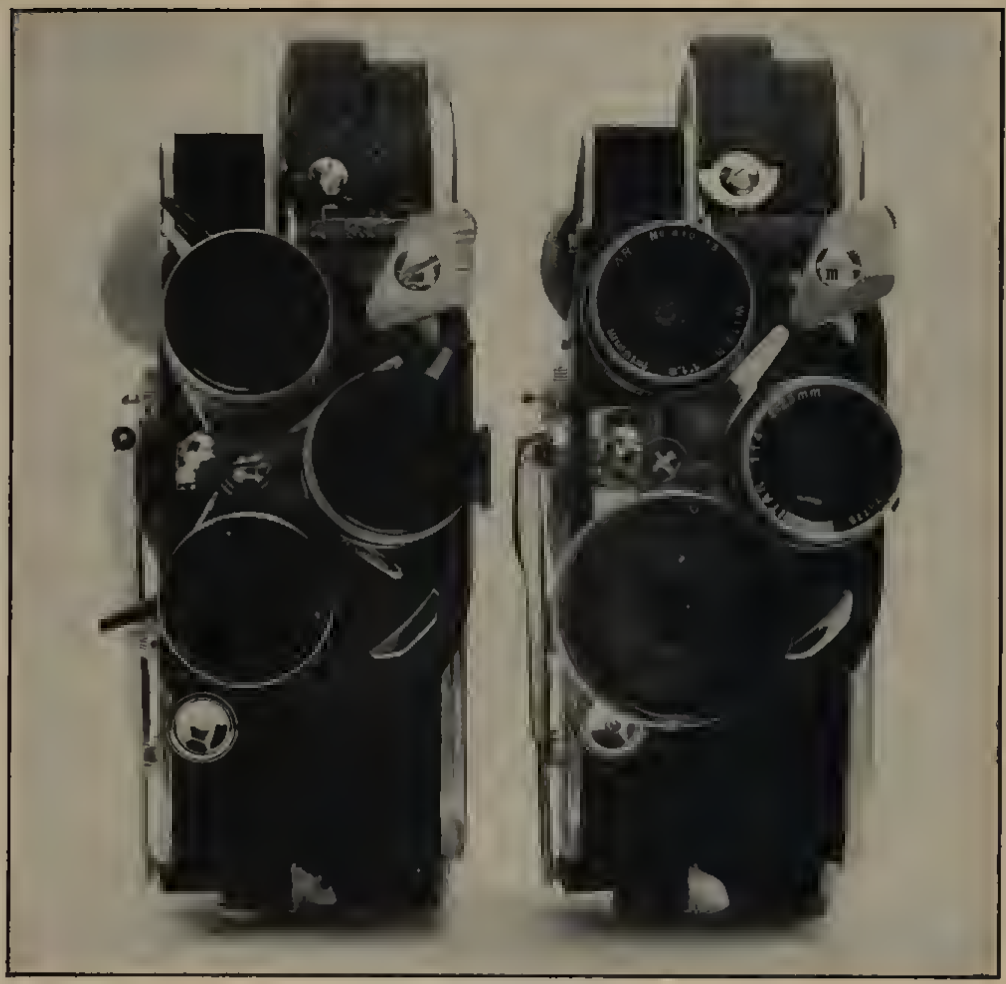
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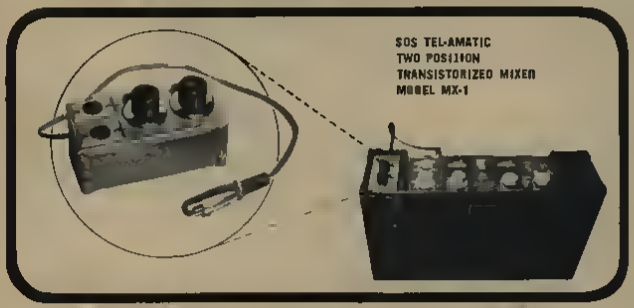
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LITERATURE

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Equipment Catalog

Burke & James' 66th Annual Catalog of Photographic and Instrumentation equipment is off the press and available to qualified buyers of equipment in these fields. The catalog's 148 pages are crammed with descriptions, illustrations and prices of practically every photographic device ever made. The section devoted to lenses is extensive and while it lists predominantly still photography items, there is considerable motion picture equipment and accessories included Write Burke & James, Inc, 321 So. Wabash Avenue, Chicago, Ill.

Traid Compact Catalog

"The Traid Line—The Line To Follow" is title of latest 1963 compact catalog and price list of Traid's 16mm and 35mm instrumentation and high-speed cameras, lenses and related equipment. The 32-page pocket-size catalog illustrates, describes and gives prices of a wide range of Traid's most popular equipment. Write Traid Corporation, 17136 Ventura Blvd., Encino, Calif

Resolution Targets

A new bulletin describing the precision resolution targets (USAF type) produced by W & L E Gurley is available by writing the company at 514 Fulton St, Troy, New York The company carries high-contrast U S Air Force resolution targets as stock items Medium- and low-contrast targets can be supplied on order and quotations can be had from the company for targets and arrays of targets to individual specifications

M-R Lighting Catalog

What is probably the most complete line of specialized set lighting equipment offered by one manufacturer is illustrated and described in Mole-Richardson Company's Catalog J. The 60-page, 8½"x11" catalog lists all M-R lighting equipment, pedestals, grid equipment, accessories, special effects devices, microphone booms, power distribution items, and books on cinematography and film production Adding immensely to the book's value, also, are the Globe Table, Illumination Tables, and treatise on Motion Picture Set Lighting that concludes the catalog •

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WORM'S EYE VIEW — Cinematographer Ellsworth Fredricks (left 1 g) and Director John Frankenheimer discuss a low-angle shot for Seven Days In May. Watching the proceedings are actors Fredric March and Martin Balsam.



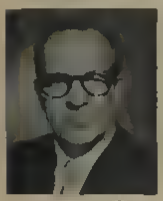
ROVING CAMERAMAN using hand held, battery powered 35mm Arriflex gets dramatic action shots of pickets as they move toward White House to engage in tumultuous riot outside the gates

The aim was for new visual concepts in the photography of

'SEVEN DAYS IN MAY'

By ELLSWORTH FREDRICKS, ASC*

THERE IS SOMETHING VERY rewarding about shooting a picture when you feel you are genuinely contributing something more than routine photography. This comes about when you are fortunate to work with a director who not only understands cinematography but who encourages your participation in planning the pictorial aspects of the picture.



Ellsworth Fredricks, ASC

This was the happy situation in which I found myself the day we started shooting the first scenes for "Seven Days In May." Much of this picture was shot on location in Washington, D. C., locale of the story. The important interior scenes, such as the Pentagon, the President's office, etc., were photographed in carefully detailed sets at the studio.

Art Director Carey Odell, aided by blueprints obtained from the National Archives and some 400 photographs of the interiors of the White House and the Pentagon, had reproduced on the Paramount Studio sound stages the principal rooms and offices of both buildings down to the last detail.

In the beginning, Director John Frankenheimer had emphasized that the lighting of these interiors should approximate the lighting in the actual locales, and that he wished to maintain cinematically through faithful pictorial rendition all the high drama and tension that permeates the story of "Seven Days In May."

Sometime before shooting was to start on the picture, I obtained a copy of the book on which the picture is based and read it while awaiting completion of Rod Serling's screenplay, hoping to formulate in advance some specific ideas for lighting and photographing the picture. This ultimately proved to be highly advantageous to me, because the authors had laid more than ninety per cent of the action within the White House and the Pentagon, and I was able to confer with Frankenheimer and thoughtfully plan the lighting of these interiors well in advance so that it would not be a "pressure" problem once we got into production.

Director Frankenheimer is an exponent of the

*Director of Photography for "Seven Days In May," a Paramount release starring Burt Lancaster, Kirk Douglas, Frederic March, Ava Gardner and Edmond O'Brien. John Frankenheimer directed, with Edward Lewis producing this joint Seven Arts/Joel Frankenheimer production.



MITCHELL CAMERA concealed in station wagon, pops out on tail gate at crucial moment to film 'stolen' shots at the Pentagon. Fredricks wears black cap; operator John Mehl is back of camera

mobile camera and there were very few instances in which we worked in static camera set-ups. This presented certain lighting demands, because with an almost constantly moving camera, the lights had to be properly set to provide adequate illumination for extended and continuous takes with no loss of mood, and with no lighting units likely to intrude in the range of the camera lens. Thus almost every interior had to be fully illuminated from foreground to background so that the principal actors could work equally well (and be properly photographed) in either the foreground or background areas.

Lighting The Pool

One of the most challenging sets to light and film, perhaps, was the indoor swimming pool (illustrated). The pool was 100 feet long by 75 feet wide, and because this was not a conventional studio set but actually an existing club pool located not far from Hollywood, we encountered the problem of where and how to place our lights. A solution was found in augmenting the architecture of the pool interior with a number of vertical columns, behind which lighting units necessary to provide the required photographic illumination were concealed.

One of the more interesting photographic set-ups on this "set," which incidentally was a fair replica of the actual White House swimming pool, was a pool-length dolly shot in which the camera's wide-

Continued On Page 609



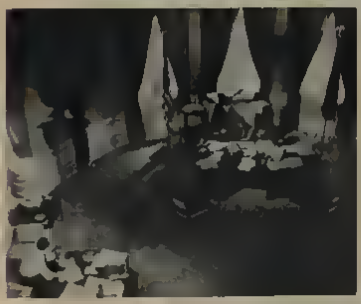
A



B



C



D



E

PHOTOS ABOVE, RIGHT, picture some of the interesting scenes in "Seven Days In May" from point of lighting and photography: A—Night scene on landing strip—actually staged and photographed on a strip of Arizona highway. B—One of many interiors filmed at Dulles International Airport. Here was encountered the major lighting problem of the production. C—Kirk Douglas approaches private elevator—another actual locale setting that required full and equal lighting, front to back. D—High level shot of the President's office, an oval enclosure which posed lighting problems. E—The White House pool set, scene of lengthy poolside dolly shot which demanded some inventive lighting

SKYDIVER

By JERRY BRONSON
Photographs by Paul F Hansen



CAMERAMAN Bob Buquor floats gently in space, as he photographs two skydivers below with spacial 35mm Eyemo camera mounted on his helmet. Camera is kept centered on action by viewing scene through finder lens mounted on helmet just above his left eye.



TWO SKYDIVERS execute tricky mid-air maneuver 10,000 feet above earth as Buquor (overhead) records the action with his camera.

USING A HAND-HELD 35mm motion picture camera is something that is being done by newsreel cameramen and others all over the country every day. But when you strap one to your head and step out of an airplane at 10,000 feet to shoot pictures, a number of unique problems are encountered.

Leigh Hunt, who did much of the 16mm photography of the *Ripcord* TV series, was well aware of the interest in skydiving the series had created. He believed that photographing the subject of skydiving on 35mm color film instead of 16mm would better show the true beauty and excitement of this spectacular sport—although he had no immediate idea where a 35mm motion picture camera could be found that would be capable of withstanding the severe environmental conditions to which it would be subjected, and at the same time be compact and light enough to be mounted on a skydiver's helmet.

Idea For Film

Hunt had an idea, and even a title . . . "Holiday In Silk," and felt that his idea would make a perfect 35- to 40-minute documentary film. Here is where the problem started. For air-to-air photography, do you get a skydiver who is a photographer, or do you get a photographer who is a skydiver?

Where do you get a 35mm motion picture camera to meet requirements never before conceived? How do you direct a film when you are falling at 16 feet per second? Other questions included where to shoot, what type of plane to use, frame rates, etc.

Leigh Hunt got together with writer Erwin Dumbrille and cinematographer Leslie Kovacs and created the script for "Holiday In Silk." It was decided that the film would be shot mainly in Washington state, in the area of Mt. Rainer, the Cascade Mountains, and the San Juan Islands. This area offered a wide variety of spectacular scenery, a minimum of air traffic, and a conveniently located airport at which to base operations. The airplane chosen was a Norseman and was piloted by the late Bob Reddick.* This particular plane was chosen because it could carry four or five jumpers, plus

CINEMATOGRAPHERS

374Z

Producers of "Holiday In Silk" move up from 16mm to 35mm to achieve maximum quality in color photography of sky divers' mid-air antics.



LESLIE LKOVACS (left) aids cameraman Bob Buquor align helmet mounted finder with that of the camera prior to going aloft for a jump and exposure of a hundred-foot roll of 35mm Eastman Color film

the pilot and in-plane cameraman, plus the fact that this particular plane was painted a beautiful yellow and white color scheme which would provide good separation against the blue sky. In addition, the Norseman had two large rear doors, allowing more jumpers to exit from the craft in a minimum amount of time. This would enable them to assume their "positions" in space more rapidly after jumping, resulting in more usable film footage per jump. The next problem was the camera and how the jumper would "carry" it. At this time, said Hunt, there was no camera in existence that would meet all of the necessary requirements.

This problem was presented to Gordon Enterprises, in North Hollywood, and ultimately this company's Applications Engineer, Sid Spalding, came up with a specially modified Bell & Howell Eyemo 35mm camera, pictured below. Gordon Enterprises rebuilt the camera into a low-profile configuration to lower its center of gravity in relation to the jumper's head. To do this the film supply and take-up spools were staggered within the camera, one slightly behind the other, with their center lines in line with the lens. The Eyemo camera was selected because of its light weight, 100-foot film capacity, and ability to operate at 48 fps. The spring motor was removed from the camera, and a 24-volt Globe motor installed in its place. In addition, the camera was semi-winterized for the 25-degree F temperatures that were expected to be encountered at the 10,000 foot elevation. Several types of power supplies were tried; finally a Gordon Enterprises' Dynamax nickel-cadmium battery pack was selected because of its light weight and ability to be "worn" by the cameraman under his clothing, and not encumber him in any way. Actually, several Dynamax battery packs were used, so that while one was supplying power for the day's jumping and shooting, the others were being recharged.



EYEMO 35mm camera modified by Gordon Enterprises, Inc., for this photographic undertaking is compacted physically, lighter in weight, and has film spools mounted side-by-side

A special fiberglass helmet was designed by Bell Helmets. They devised a headpiece which required a complete new mold, incorporating a "shelf" on which the camera could be securely mounted. The helmet had to fit the cameraman perfectly so that it would not create too much imbalance or cause injury during shock of the parachute opening.

All jumps by the performing skydivers and cameraman Bob Buquor were made from 10,000 feet, free-falling to 2,000 feet before opening the parachutes. Allowing for time to arrange subjects in front of the cameraman, approximately 33 seconds of shooting time was available during each jump. A great deal of control of placement is available to the skydivers, and lenses of varying focal lengths were used to further improve placement. Using an 18mm lens, cameraman Buquor worked as close as six to ten feet from the jumpers. With a 35mm lens, distances could be increased up to 12 feet with excellent coverage of the parachutists. Experience showed that a jumper could maintain his position in front of the cameraman, with *both* free-falling,

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FIG 1—Action as filmed in front of plain (blue) backing



FIG 2—Female matte of action in Fig 1 Also called "matte master"



FIG 3—Male matte of action in Fig 1 (In practice, a print from film shown in Fig 2)



FIG 4—Background scene to be combined with foreground action (Fig 1).



FIG 5—The final composite print (Fig 1 plus Fig 4, via Figs 2 and 3)

Traveling Matte Photography And The Blue-Screen System

PART 1

THE RESEARCH AND Educational Committee of the American Society of Cinematographers has received numerous inquiries concerning the technical details of the commonly-used blue-screen traveling matte process In explaining this process, it has first been necessary to explain in detail other traveling matte systems in comparison. This led to the author's decision to write it all out in the form of a tutorial paper, to be divided into several parts in order to properly cover all aspects of this complex field of professional motion picture production.

Our subject, therefore, will be presented in four parts, each devoted to a specific phase in the overall scope of traveling matte photography, as follows

Part 1: General description of traveling matte systems

Part 2: Specifications for equipment and photographic procedure for

the blue-screen system

Part 3: The laboratory phase of follow-through on blue-screen traveling matte shots

Part 4: Conclusion—report on technical experience of past problems and future requirements in traveling matte photography

This entire study is based on investigations which were begun by Petro Vlahos and the author during our association with the former Motion Picture Research Council. Since several articles have already been published describing most of the dual-film traveling matte systems, this study is aimed to single out and describe the blue-screen system. Part 2, to follow, is intended to enable reasonably experienced cine technicians anywhere to set up a blue-screen system for making traveling matte shots comparable to that achieved by major studios. The study should also be helpful to many previously experienced in traveling matte photography, affording a better understanding of the complexity of composite photography and lead to better results and notable improvements in motion picture productions.

Traveling matte photography is a most powerful tool for achieving story-telling impact, and its use is much too limited compared to its inherent potentials. It is hoped, therefore, that this article and those that are to follow will provide the stimulus that will lead to increased use of the art and result in improvements of such significance as to increase the confidence of motion picture producers generally in traveling matte photography.

Part 1: Description of Traveling Matte Systems

Traveling matte processes are the subject of increasing interest among film makers due to recent improvements in techniques which have further enhanced the advantages of such processes—some of which are:

1) Almost unlimited scope

2) Sharp focus in backgrounds assured.

3) Color balance between foregrounds and backgrounds can be controlled in printing

4) Reduction of production time on the set

5) Backgrounds can be photographed subsequent to filming the corresponding action

The attributes and advantages of traveling matte process and process

By WALTER BEYER*

Head of Engineering Research
Universal Pictures Corporation

projection are often compared. Here it should be pointed out that each technique has its proper application and that the one will rarely substitute for the other, nor replace it. Although process projection is invariably limited by the size of the process screen and requires that there be considerable stage space behind the screen, it has the advantage that the background can be observed by the director and cast as they work before it, also, the resulting composite picture is available with the dailies with no special optical work required.

All traveling matte systems have certain common characteristics: the action phase is photographed against a plain backing indoors on a sound stage. Various types of backings have been used in conjunction with various kinds of illumination, but the end result is the same: a duplicate negative which contains the foreground action that was photographed against a plain backing, and including the background scene photographed separately but combined with the action in an optical printing step.

In order to combine the foreground action photography with the background photography in traveling matte procedure, it is necessary to have a silhouette or matte of the progressive foreground action. In the optical printing step, this silhouette matte serves to prevent exposure of the background scene in that area occupied by the foreground action. In the initial pass through the printer, the matte causes that area of the positive print film to remain unexposed, so that the foreground action may be printed-in in the unexposed area in the second pass of the film through the printer.

The strip of film that is the silhouette of the foreground action is called the *matte*, and the fact that the opaque silhouette thereon can and does progressively change in form and in position within the film frame as the film moves through the printer gives it the term *traveling* matte.

In practice, from a negative of an action staged in front of a plain backing (in the example illustrated, a backing that is blue in color) a matte is made in which the backing area in each picture frame is completely opaque, and the action clear or transparent. This matte is variously termed a *matte master*, *cover matte*, *action printing matte*, and most commonly—*female matte*. A black-and-white print made from this matte is, of course, just the reverse—clear and transparent where the former is opaque. This second matte is known as the *background printing matte*, *male silhouette*—or more commonly, *male matte*.

These mattes, and the results they can produce on film, are illustrated on the opposite page.

One of the chief difficulties with any traveling matte system is achieving the great accuracy in the mattes which such systems require. Mattes must be a precise silhouette, of either the background or of the foreground action to insure the perfect registration necessary to avoid "fringing" in the final composite print.

The two basic traveling matte systems presently in use are identified by the number of negative films used in the camera in the process of photographing the foreground action, and are known as the *single film system* and *dual film system*—the terms being self explanatory.

The single film system has been widely used for a number of years and employs any camera that is normally used for standard 35mm flat or squeezed photography, or such systems as VistaVision and Technirama; also 65mm cameras used in such photographic systems as Todd-AO, and Super and Ultra Panavision. Essentially the single film system requires that color negative be used in the camera and that the foreground action be photographed against a plain but colored background—the color depending upon the illumination used. The most successful of these single film processes, perhaps, is the Blue Screen Process which involves, obviously, a backing or background screen of blue color.

The dual film system utilizes two separate negatives in the camera plus a prism or beam splitter that divide-

Continued

*Formerly Staff Engineer of the Motion Picture Research Council, Hollywood, and presently Chairman of the Research and Educational Committee, American Society of Cinematographers

the light entering the lens and directs it as required to each of the negatives so that the matte and the foreground action are both photographed simultaneously with the one camera.

In American studios, and in some of the studios overseas, dual film matte systems utilize the Technicolor 3-strip camera, which readily provides the dual-negative facility the system requires. In England, a "beam-splitter" camera manufactured by the J. Arthur Rank Organization is used extensively for traveling matte production. With such cameras, the procedure is limited to the use of 35mm film and a 4-perforation pulldown. Instead of a plain blue backing, either an ultra violet, infrared or sodium-light and screen combination is used for the background.

In theory, at least, the dual film system is generally preferred, because the required matte is produced on black-and white negative simultaneously with the photography of the action, which may be recorded on either color negative or black-and white. The latter negative will record an image of the foreground action only as though photographed against a black backing.

Freedom From Restrictions

The principal advantages of dual film matte systems lie in the complete freedom from restrictions regarding foreground material, and the reproducibility of transparent objects.

Single-film matte systems have their advantages, too. The fact that only a single negative is required in the camera does not restrict the system to the 35mm medium alone. Also, use of a single film obviates the need to align and register two film movements in the camera. Recent modifications of the Blue-Screen matte process make it possible to reproduce transparent objects and eliminate blue fringing. Where the required blue color in the backing is obtained on a transparency screen by means of projection-type arc lamps, it is also possible to project for viewing and timing purposes the intended background scene while the action is being photographed.

The foregoing outlines only briefly the fundamentals and the differences between various traveling matte systems, and many of the statements are made necessarily in generalities. A more detailed description of each matte system follows, and specific details of the photographic aspects of the Blue-Screen Process will appear in Part II of this article.

Single Film Matte Systems

Blue-Screen System: This system has been used in motion picture studios for a number of years with varying degrees of success. Foreground action is illuminated the same as for conventional cinematography and no filters are required on either the lamps or the camera lens. The backing may be of canvas, painted blue and illuminated from the front, or a blue translucent backing illuminated from the rear by a bank of incandescent lamps.

The single color negative in the camera receives normal exposure from the illumination on the foreground subjects and action which it records. The blue backing against which the action is played causes the blue-sensitive layer of the color negative to be properly exposed, with little or no exposure in the green- and red-sensitive layers. Following photography, three black-and white negatives are then made from these positives, and by combining the negatives and positives and using high-contrast film, the required male and female silhouette mattes are produced.

Since the production of mattes by this method is dependent on the difference in the color of the backing compared to the foreground objects, no apparel, costume, props or other object that is blue in color can be used in the foreground composition. For the same reason, transparent objects such as glass, nets, loose hair, etc., must also be avoided in the foreground composition or action. Also, a very rapid motion will result in a blurred image, and the moving object will either disappear entirely or be followed by an undesirable blue fringe.

It is well to mention here, also, that extremely careful registration is required when printing the action negative in order to avoid fringing in the print, because the blue-screen area in the scene is also recorded on the action negative.

Advantages and Disadvantages

Until very recently, the Blue-Screen Process was not too highly regarded, but it had been made to work when the occasion demanded and it had the advantage that it could be used with any camera or film system. Modifications since made in the Blue-Screen system by the former Motion Picture Research Council has resulted in overcoming some of the major difficulties that have been encountered with the system in the past. The principle step in these modifications involves laboratory procedure wherein a color difference matte is produced, and this has resulted in referring to the improved technique as the *Color Difference Blue-Screen Matte System*. Because of this lengthy label, however, we shall continue to refer to the procedure as *Blue-Screen Matte System*, preceding it perhaps with such adjectives as "new" or "improved," etc. So, let us proceed with describing some of the *differences* besides the color difference in this new, improved Blue-Screen Matte System.

In this improved system, the backing, lighting and photography are identical to that for the old Blue-Screen Matte process. But here the similarity ends. The blue backing plays no direct part in the photography of the action. Its only purpose is to facilitate the making of the required male and female mattes. Since the backing is blue in color it causes exposure on the blue color layer in the emulsion of the color negative, leaving the green and red layers unaffected. So far as these color layers are concerned, the backing might just as well be black. If it were not necessary to use the blue layer to reproduce color in the foreground, the system would be able to reproduce transparent objects and be free of the tendency to create blue fringing. This, then, is the principle of

Continued On Page 602

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Rewarding Assignment

Hal Rassan, ASC, directing the photography of Moral Re-Armament's "Miracle at Midnight," found MRA's Mackinac Island studio excellently equipped for every professional film making need.



HAL ROSSON (center) on set with his camera crew during the filming of a restaurant scene for MRA's 'Music at Midnight' Camera is 35mm Arriflex which was used to film entire production



ROSSON (behind camera) lines up shot on set up on lakeside dock Later camera was placed on deck of a motor barge and the action shot as both barge and speedboat churned through Lake Huron.

By JAMES MACLENNAN

MORAL RE-ARMAMENT is one of several organizations in the U.S. which makes effective use of feature motion pictures to further its aims and widen its international appeal. The organization has built a complete motion picture studio on Mackinac Island, Michigan, which will greatly accelerate MRA's ambitious program of motion picture production.

Hal Rosson, ASC, one of Hollywood's veteran directors of photography, recently completed filming for MRA its latest feature-length production, "Music at Midnight."

"I have high regard for the aims of this very worthwhile organization," Rosson says, "and when I learned MRA was seeking an experienced Hollywood cinematographer to photograph 'Music at Midnight', I offered my services." Early in June, MRA Productions started filming the picture with Rosson directing the photography.

The Story

"Music at Midnight" is a story of revolution, both by violence and by consent. It is an exciting picture of a force greater than force solving the desperate plight of trapped people on both sides of the Iron Curtain. Photographed by Hal Rosson with great sensitivity and insight in scenes of fast action and moving drama, the film comes to an unexpected dramatic ending, pointing the way to a new age for the peoples of the world.

The script called for location settings of such contrasting character as an airport runway, the river frontier of a European country, a high-class restaurant, a park in a Western capital, and the exterior of a European fortified mansion.

An island in the north woods of Michigan is not the ideal choice of site to find such settings. Yet all but one of the location scenes were shot on the island.

Contrasting with the north country clapboard cottages, there is in the heart of the island an historic home built by the Cudahy family early in the

century. Filmed "day-for-night" from a certain angle and unaltered, it took on all the character of the mid-European military headquarters of the story.

The grounds of this estate had been chosen as the site for the exterior lot for the Studio. Here a London-style street was built, with a two-story city house, park railings, gardens, a permanent street and sidewalks.

By law, no motorized vehicles are permitted on old-world Mackinac Island. This meant that the brutes, generator, camera crane, all the sound and grip equipment, building materials and food for the company had to be transported across the island to the location site by a shuttle service of horse-drawn drays. Even the automobiles used in the picture had to be towed by horses to the location site.

A private jetty on the shore of Lake Huron provided the river frontier. To the delight of tourists and islanders, a night sequence was filmed of a rebel leader parachuting into a river and making a getaway in a motor launch under rifle fire. Except for the guns, no major properties were imported, the existing material around the jetty alone being used—a crane converted into a half-track military vehicle; a transport barge into a landing craft, etc.



HAROLD ROSSON ASC

Directs a lighting set-up for scene for MRA's "Music at Midnight"

Getting Shooting Underway

The filming schedule of "Music at Midnight" called for 21 days of sound stage work, and 3 days shooting on the back lot. The back lot was to be turned into a European city street, with the main action played in front of a large house located in the middle of the set. The position of this house was determined so as to make best possible use of the sun.

With construction about to commence, the Art Director made sure his layouts took into account the movement of the sun one month later when the scene was to be shot. Even so, when the company moved onto the set, it was evident the sun was not going to behave as wanted. Instead of a planned six hours of sun, Rosson would be lucky to have four. Brutes and 170's were mobilized, but they were not in sufficient quantity to equal the effect of the sun on the face of the main house.

With the only alternative that of doing twice the work in half the time, the company crammed as much shooting as possible into the four-hour day and finished ahead of schedule.

An interesting night sequence was one of the first to be shot.

Two boats steered a course away from Mackinac Island, riding with the wind. The smaller carried two actors, Martin Landau and Esmond Knight. The larger boat carried the motion picture camera, a varied assortment of lights, sound equipment, and a crew of men expecting to feel rather sick in the choppy water.

As soon as this strange convoy got outside the breakwater of the island harbor, the lake, oddly enough, became very calm. It seemed strange to have such a smooth ride yet such a strong wind. The captain of the camera boat managed to hold a course in a following sea at exactly the speed of the waves.

As Director Lewis Allen had been told he would have to go to

Continued On Page 612

SET REPRESENTING Eastern European city ruin was erected on the 120-ft by 90-ft sound stage of MRA's studio. Visible are some of the studio's modern lighting equipment and lighting effects achieved with it





THE ONLY SEQUENCE for "Music at Midnight" not filmed at MRA's Mackinac Island studio was shot at night at the airport at St. Ignace, on Michigan's Upper Peninsula



FIG 1—Looking much like a slick tracking camera for instrumentation use is creation pictured above with its designer, Richard Moore. The 35mm motion picture camera is entirely remote-controlled and was designed to photograph spectacular action scenes for Moore's upcoming film production, 'Trained To Die.'

Remote Controlled Camera

Designed not for instrumentation but for feature film photography, here's a custom remote-controlled job that will photograph spectacular action not possible with conventional motion picture cameras.

By HERB A. LIGHTMAN

AN IDEA FOR an unsual feature film, plus a burning ambition to see it come to life on the screen, has resulted in the development of a 35mm motion picture camera that is remote controlled in every function—an equipment package so uniquely practical that it may very well revolutionize filming techniques in several important areas of motion picture production.

It all began about a year ago when Richard Moore, Executive Vice President in Charge of Design and Development for Panavision, Inc., wrote an original motion picture script entitled "Trained to Die," which concerned a five-man B-26 bomber crew forced down behind German lines in Bavaria during World War II. The fliers are attacked by a group of militant Hitler Youth and the main action concerns the air battle that develops between these boys and the adult airmen.

Moore, a graduate of the USC Cinema Dept., and a member of the Hollywood cameramen's union, had directed photography on a few of the Jack Douglas "I Search For Adventure" television episodes and had co-produced (together with Panavision president Robert Gottschalk) a feature film entitled "Dangerous Charter." He visualized his script becoming a low-budget, action-packed feature film to be made in the snow-peaked Mammoth Lakes area of Northern California, a location closely resembling Bavaria. Indicated in the script were several important sequences which clearly demanded spectacular camera treatment. In order to do justice to these sequences, something more versatile than available camera planes and standard filming equipment would be needed.

"I was aware that much of the aerial battle footage could be photographed from the side and nose ports of standard camera planes," Moore explains, "but this has one great limitation—and that is that you can only pan so far and then you have to cut away to a new angle. What I wanted to do was provide the means for a continuously moving camera in shots where a fast-moving object, such as another plane, must be kept continuously in the frame. This indicated to me the need for a camera that could be remote controlled in every function—not only panning and tilting—but with a zoom lens that could be operated remotely and simultaneously monitored."

Since there was no such equipment available on the market, Moore decided to design and build his own. Taking a leave-of-absence from his work at Panavision, he set up a completely equipped machine shop, installed a drafting table and hired two precision machinists to work on a part-time basis. He turned out his drawings, had prints made, and the machinists came in to do most of the fabricating while Moore himself did all of the assembly work.

As the nucleus of the package, he decided upon

a Bell & Howell Model 2709 studio-type 35mm motion picture camera with a shuttle-type movement, selected, Moore said, "because of its superlative steadiness," and mounted it with a Berthiot zoom lens. Because the weight of this lens is considerable, he had to replace the standard turret of the camera with a hard faceplate.

Moore soon discovered that the studio-camera/zoom lens combination threatened to become quite large, presenting certain problems when mounted on high-speed aircraft. In order to cut down the overall contour, he designed an adapter enabling the 1,000-foot magazine to be mounted horizontally, and re-directed the film flow through two 90 degree turns going into and coming out of the camera movement (Figs. 2 and 4). Two sprocket drive-wheels connected together by a geared Gilmer belt keep the film moving through this adapter at a constant speed. The exposed film is ultimately spooled in the take-up side of the magazine with the aid of a powerful torque motor (Fig. 3). Thus the flow of film out of the magazine, through the adapter and back to the magazine is quite smooth. The torque motor is AC powered and is so geared that there is no slippage on the take-up. The pulley on the take-up side of the magazine simply engages a small gear on the torque motor, insuring positive drive. On the drag side of the magazine Teflon is used, providing just the right degree of slip to create the necessary drag on the film. Moore has included flanges in the magazine for smooth take-up, espe-

Continued On Page 606



FIG 2—Top front view of Moore's camera showing unique arrangement of the 1000-foot magazines. Grid of the light meter may also be seen, also the camera drive motor with its control unit.



FIG 3—Here may be seen in closer detail the exposure meter, and meters that control setting of focus and lens stop; also the auxiliary torque motor for magazine takeup.



FIG 4—View of magazine with top removed, showing unique 90° turn in path of film as it leaves and re-enters magazine from camera. Film moves in normal vertical path in camera gate.



FIG 5—Remote control station through which every function of the camera may be controlled. It comprises of operator's console, assistant's console, and viewing monitor.

PRODUCT REPORTS

Brief reviews of important new equipment for film makers



EASTMAN'S new 35mm magnetic recording film is code imprinted

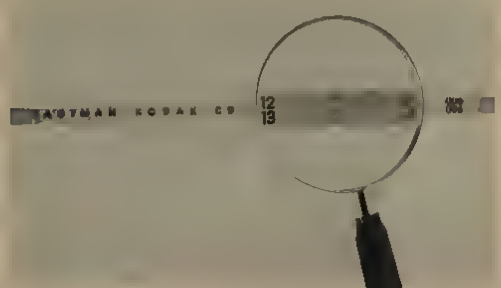
NEW E-K MAGNETIC FILM AND TAPES

A new high-output magnetic sound recording film, Type A704, in 35mm width, introduced last month by Eastman Kodak Company, is substantially improved over the company's old Type A701. In addition to an increase of 40 per cent in undistorted output over the old type film, the high frequency sensitivity of the new Eastman magnetic film has been upgraded to produce more vibrant highs and a more natural balance between highs and lows.

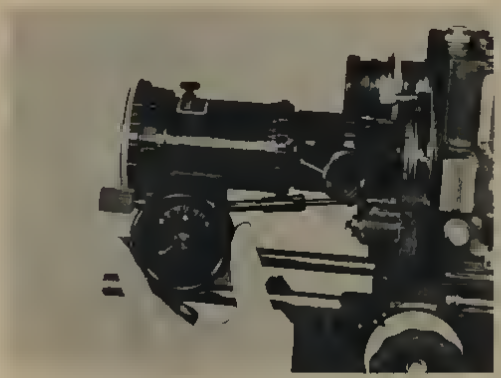
According to the manufacturer it has produced a new, improved oxide coating for the film which has higher sensitivity and output, with no sacrifice in high frequency response, durability or other desirable characteristics. Also, a new resin binder has resulted in smoother coating of the oxide, which sharply reduces noise and intermodulation distortion, it is claimed. The new binder, which replaces the chlorinated binders traditionally used on magnetic sound films, has a high degree of chemical stability which extends the useful life of the film and also keeps it pliable and non-dusting.

The new Eastman sound film has a unique signature on

Continued On Page 600



EASTMAN KODAK launches two new ¼-in. magnetic tapes, also coded



CSC'S Zoom Lens Correlator automatically aligns zoom with camera

ZOOM LENS CORRELATOR

Engineered and manufactured by Comera Service Center, Inc., 333 West 52nd Street New York 19, N.Y., the Zoom Lens Correlator accomplishes accurate alignment of the cross-line in the lens reticle with the cross-line of the camera, assuring precise zoom shots. Displacement of the center frame is virtually impossible when zooming from wide angle to telephoto position. A large knob with calibrated built-in focal length distances controls zoom smoothness and permits the camera operator to predetermine the zoom range by looking-off focal length distance.

According to Camera Service Center, all zoom lenses, in order to zoom precisely, should be used with a zoom correlator. Lengthy, heavy zoom lenses, especially, require this because the combination of extra length and weight tends to slightly unseat the lens in the area of clearance between the lens and the camera lens orifice. Such displacement, says CSC, will throw the mechanical and optical axes of the lens out of parallel. The greater the angle formed as the axes diverge, the greater the image shift and the focus problems. Carried to extreme, this condition will cause the image to be formed outside of the focal plane and aperture center.

The CSC Correlator is designed to completely compensate for angle divergence between the mechanical and optical axes. Sensitive controls accurately align the lens within its mount and precisely establish proper angles and relationships between the focal plane, the mechanical axis and the optical axis. Once all the key adjustments are made on the Correlator, the lens will zoom straight and true, maintaining the subject in the same position in the frame for the entire zoom range. ■



SYLVANIA'S new Flexi Core Voltage Booster—part of new system

SYLVANIA'S PHOTO LIGHTING SYSTEM

Sylvania Electric Products, Inc., whose Sun Gun gave impetus to the quartz-iodine lamp as an effective new photographic lighting source, has since developed several companion pieces of equipment and now offers a compact, lightweight, highly professional lighting system for photography that provides full control of light output and color temperature.

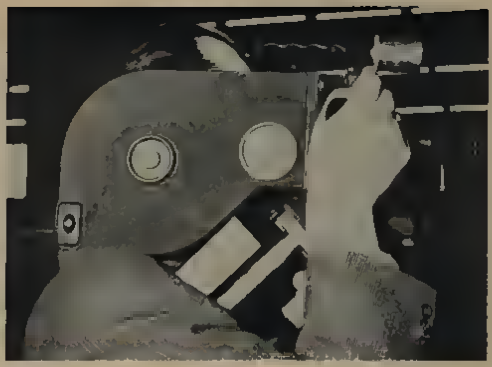
The system consists of a newly designed Sun Gun photo light, a solid state electronic control for light output and color temperature, and a voltage booster in two models that permits use of Sun Guns under low line-voltage conditions.

The Sun Gun Photo Light (model SG-63A) is equipped with a powerful 1000-watt, high-silicon halogen lamp with a built-in fuse. In its non-tarnishing reflector, the lamp produces 65,000 center-beam candlepower with a color temperature of 3400 degrees Kelvin at 120 volts. The halogen lamp has exceptionally high light output for its tiny size and maintains its light volume and color temperature throughout its entire life.

The photo light weighs only 3½ pounds and can be held in the hand. It is equipped with a universal post clamp with a maximum opening of 1½ inches for easy mounting on a light stand or pole. The head is fully adjustable through a 90 degree range. By mounting the head upside down, an additional 90 degrees adjustment can be obtained. A special latch permits the use of filters in the inverted position. The unit has locking, two-leaf barn doors that can be rotated 360 degrees for directional light control, a head-angle positioning arm and lock, a channel for flood or portrait lenses, and a 12-foot cord.

The new electronic control for light output and color temperature, designated the Sylvac Control (model SV-9), plugs into a standard 120-volt A.C. outlet and the photo light plugs directly into the control. The unit has a three-position switch—off, high, and low. In the high position, the control circuits are by-passed providing maximum brightness of the lamp. In the low position, a single knob controls light output and color temperature. At line voltage of 120 volts or more, a simple adjustment of the controls makes it possible to vary light output continuously from zero up to full brightness or to select color temperatures up to 3400 degrees Kelvin. A 3200 degree Kelvin temperature can be selected and visually confirmed for use with Type B professional films.

Continued On Next Page



ECLAIR'S new 16mm reflex camera in shooting position

NEW ECLAIR 16MM CAMERA

With the appointment of Eclair Corporation of America, Los Angeles, as U.S. distributor of the new French Eclair 16mm camera, this interesting camera is finally available for purchase in the United States, although deliveries are yet quite limited.

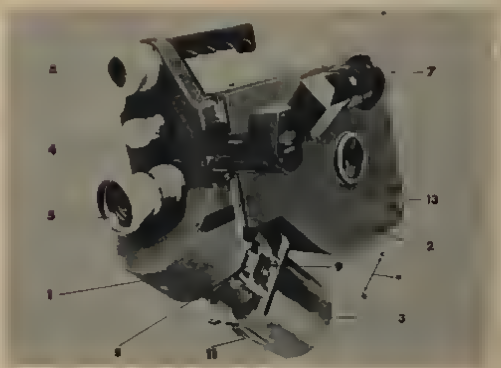
The new Eclair is completely new and original in design, and is said to be the first truly silent portable 16mm motion picture camera. The New Eclair 16 comprises three specially silenced units which can be instantly assembled: the camera body including the reflex viewing system and 180 degree reflex shutter; the film magazine; and the electric drive.

The 2-lens turret of the camera body will accept any lens from 5.7mm to zoom lenses. Although designed to take lenses in bayonet mount, C-mount lenses can also be accommodated without alteration to the lens bush. Special lens adaptors are available for Cameflex, Arriflex and other similar lenses.

The left and right eye reflex finder (7 in lower photo) provides for double 360° swiveling — the eyepiece swivels within the finder tube to provide for either left or right eye use or high or low eye position without tilting the image. The viewfinder itself swivels to both vertical and horizontal positions.

Also provided are facilities for clutching-in the reflex shutter inching knob; setting the shutter opening from 0

Continued On Next Page



SIDE-FRONT view showing lens turret (4), reflex finder (7), motor (3)

EASTMAN RECORDING FILM & TAPES

Continued From Page 598

the back, which identifies Eastman Kodak Company as the manufacturer (see photo). The imprint includes production code numbers which aid the company in running more than a hundred quality control tests on each batch of film. For the user, the code imprint makes possible a permanent, useful reference log of optimum bias settings, re-use data, purchase dates and other information. The new product is available in a full range of sizes, cores and windings from Eastman Kodak Company.

Simultaneously with introduction of its new magnetic recording film, Eastman Kodak announced two new quarter-inch magnetic recording tapes. Type A303, basically a low-print tape with signal-to-print ratio of 54 db, has high frequency sensitivity and undistorted output greatly improved over conventional general purpose tapes, offering the user more vibrant highs, more natural balance between highs and lows and a better signal-to-noise ratio.

The other new tape, Type A304, is a high-output tape which Kodak claims has more than double the undistorted output of conventional tapes. The signal-to-noise ratio of this new tape, as measured by zero signal to saturated output, is 79 db, with print-through held to 49 db. Improved qualities of both tapes, according to Eastman Kodak, is due to use of a new iron oxide dispersion and a completely new resin binder. Both tapes will be available on a polyester base and on an improved Durol base—the latter a modified triacetate approximately 40 percent stronger.

As with the new Eastman Magnetic Recording Film, the new Magnetic Recording tapes have a unique printed code on the back, which identifies EK as the manufacturer, and can be helpful to the user in a number of ways. The coding is spaced at 15 and 7½ inch intervals to provide a convenient timing and editing device. Both tapes are available in a full range of lengths and thicknesses and will be distributed through electronic supply houses.

SYLVANIA LIGHTING SYSTEM

Continued From Page 589

The Sylvac Control features compactness and lightness through the use of solid-state components which include a silicon control rectifier, a silicon diode, and a unijunction transistor. The control circuitry is mounted on rubber shock absorbers for protection during shipping or handling, a feature particularly important for location photography. The control unit weighs only 4 pounds and is 7 inches long, 6¾ inches wide and 3½ inches high. It has a universal post clamp for easy mounting on a light stand and has a six foot power cord. The control meter is calibrated from 2800 to 3500 degrees Kelvin and from 60 to 135 volts A.C.

A second Sylvac Control (model SV-20) is designed to accommodate two 1000-watt Sun Gun photo lights or any combination of photo lights up to an aggregate total of 20 amperes. Operation of the model SV-20 is essentially the same as the model SV-9 and it includes all of the design features of the SV-9 such as rubber shock mounting and accurate metered control. The model SV-20 has the same physical dimensions as the model SV-9 and weighs 4½ pounds.

The Sylvania Flexi-core Voltage Boosters are designed for use with the Sylvac Controls, which control light output and color temperature of Sun Gun photo lights. The use of a booster makes it possible to attain the same photo light performance characteristics in a low line-voltage situation as is possible with standard 120-volt line input.

A 9 ampere model is available for use with the new Sylvac Control (model SV-9) which accommodates one 1000-watt Sun Gun photo light or several photo lights up to an aggregate of 9-amperes. A 20-ampere unit is available for the Sylvac Control (model SV-20) which accommodates two 1000-watt Sun Gun photo lights or several lights not exceeding a total of 20-amperes.

This new Sylvania lighting system (SG-63) includes a flood lens and a portrait lens. Optional accessories available for use with the new Sun Gun photo light and the original professional model (SG-60) include dichroic daylight filters and lenses that convert to daylight color temperature, a super spread lens, large barn doors, a snoot and optical sniper snoot, and a diffusing filter. A carrying case, fitted to hold the Sun Gun, Sylvac Control, and accessory lenses and filters also is available. The new photo lighting equipment is manufactured by Sylvania's Lighting Products Division at Salem, Mass.

NEW ECLAIR 16MM CAMERA

Continued From Page 588

to 180°; and de-clutching all transmissions to facilitate soundless operation of the camera.

The 400-foot coaxial magazine is similarly silent. It provides for daylight threading and can be locked instantly to the camera body. The magazine will also accept 100- and 200-foot daylight loading spools and 400-foot standard core-wound rolls of film. Two counters meter the film—one for metallic spools, one for core-wound film. Both are graduated in feet and meters.

Two types of electric motors are available, both silent: a sync motor for AC operation, and a transistor-governed motor for DC operation with sync frequency generator for sync sound production with tape recorders. Both motors may be had in either 24 fps or 25 fps speed.

The film transport mechanism is claw and register-pin with side pressure plates to enhance stability of film travel through gate.

Despite the unique and unorthodox design of the new Eclair 16mm, it actually provides surprisingly effortless operation. The magazine rests on the operator's shoulder, as shown in top photo, page 599, and the motor fits into the shoulder pit. Thus one hand can be kept free to control motor switch and make lens adjustments. With the 400-foot magazine in place, the camera weighs between 18 and 19 pounds, and while this may seem somewhat heavy for a so-called "hand-held" camera, its compact shape and good weight distribution make it feel entirely comfortable on the shoulder.

Temporary offices of Eclair Corporation of America are at 8078 Woodrow Wilson Drive, Hollywood 28, Calif. ■

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TRAVELING MATTE SYSTEMS

Continued from Page 572

the Color Difference Blue-Screen system, the blue record is not used directly

The Color Difference Matte

In the laboratory, the color difference matte is produced by bi-packing a black-and-white green color separation positive with the blue layer of the original negative. This matte registers as density only those areas in the scene where the blue content is less than the green content. This matte together with the green positive represents a faithful duplication of the blue color content within the scene — except, of course, where the blue content does not exceed that of green. All colors except blue and violet will, therefore, reproduce in normal values. The blue backing reproduces as black and makes possible normal reproduction of transparent objects in the scene such as smoke, glass, etc. Unlike with the system described earlier, objects in rapid motion in the scene will reproduce normally and without fringing.

Advantages and Disadvantages

Photographic tests, which involved a full range of colors and also a number of common transparent objects, have recently been completed. Essentially, the results indicate the potentials and the limitations of the improved Blue-Screen system. The chief advantages are summarized as follows:

1) Any film or camera system may be used

2) Transparent objects are fully reproducible

3) Absence of color fringing.

4) No filters required on action or background illumination.

5) Permits extending backing under feet of players, props or other objects within the scene, as in the old system.

There are some limitations, too:

1) Rich blue or violet colors cannot be reproduced. If there are no transparent objects in the scene, the threshold of recognition of the color difference matte can be raised so as to reproduce medium blues and violets while still maintaining a major discrimination against the blue backing.

2) Separation positives are required, and the male and female mattes

Continued On Page 604

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The projector is a converted front shutter Simplax with a two pin intermittent. 16mm or 35/32 film runs at a speed of 144 ft. per minute while 35mm film runs at e speed of 165 ft per minute

1. A variac controls the light intensity.
2. A 500 watt lamp is used for 16mm end a 1 000 watt for 35mm (a blower is used to cool tha lamphouse).
3. A 2½ inch projaction lens is furnished with each unit
4. A start stop lever controls the power to the lamp and motor.
5. The magazine end take up core takes up to 3,000 ft of film
6. Upper guide rollers are made to handle the film from either direction of the feed reel.
7. A free wheeling teke off flenge is provided in the magazine.
8. A lamp near the tekeup reel permits hand inspection of the film prior to takeup

NOUVEAU

Le projecteur contient un obturateur Simplex anterieur transformé avec deux clavettes intermittent Les films de 16mm ou 35/32 tournent avec une vitesse de 144 pieds à la minute, tandis que les films de 35mm tournent avec une vitesse de 165 pieds á la minute

1. Le regulateur de voltage d'intensité d'eclairage
2. La lampe de 500 watt est nécessaire pour les films de 16mm, et de 1000 watt, pour les films de 35mm (un ventilateur est mise pour rafraichir la chambre de la lampe).
3. L'objectif de 2½ est instale
4. La manette de mise en marche et d'arret controle en meme temps la lampe et le moteur
5. Le boite de films evec noyau peut contenir 3000 pieds du films.
6. La roue supérieure est construite de maniére de racevoir le film dans les deux directions, nourrie par le bobine centrale
7. Une roue est instelée pour libérer rapidement le film de la boite
8. La lampe se trouve pres de la bobine recapteuse, et donne toute facilité pour inspecter le film e main dans le projecteur



NUOVO

Questi proiettori sono Simplex transformati, otturatore al fronte, meccanismo di scatto di due punte La velocitá di proie zione in 16 o 35/32mm e di 144 piedi per minuto, e in 35mm, di 165 piedi per minuto.

1. Controllo manuale della luminositá della lampeda.
2. Lampada dl 500 watt per 16mm e dl 1000 watt per 35mm.
3. Obbiettivo di proiezione dl 2½".
4. Maniglie per controllo di motore e lampeda di proiezione.
5. La cassetta porta pellicola puo contenere 3000 piedi.
6. I rulli superiori di guida sono construiti per operare con film provenente di ambi lati della bobina svolgitrice.
7. Disco con montatura sporgenta nel magazzino.
8. Una lampadina illumina la bobina avvolgitrice, permettendo l'ispezione manuale del film prime che si avvolga nel proiettore.

NUEVO

Esta máquina es un proyector simplex convertido, obturador al frente y movimiento intermitente a doble grifa. Para 16mm o 35/32mm, la velocidad fija de proyección as de 144 pies por minuto, para 35mm es de 165 pies por minuto.

1. Un reostato controle la intensidad de le lampera de proyección.
2. Para 16mm se usa una lampera de 500 watt, y una de 1000 watt para 35mm (un chorro da aire ventila las lámparas en ambos casos).
3. Cada unidad está provista da un lente de proyección de 2 pulgadas y media.
4. Una palanca de control opere el motor y la lampera simultáneamenta.
5. Capacidad de proyección: rollos de haste 3000'.
6. Los rodillos de gula superiores operan con la película en ambes direcciones.
7. La tapa de la bobina de cerge es desenrosceble.
8. Una lámpere ubicada junto a le bobine da toma permite le inspección manual de la pellcula entes que se rebobine en la bobina superior del proyector.



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may require two or more steps in their production.

Dual-Film Matte Systems

Common considerations— Dual-film matte systems (Ultra-violet, Sodium, Infrared) approach the ideal since the color negative is exposed only by the foreground action illumination, while the black-and-white negative is exposed entirely by the backing illumination. It is therefore possible to transfer the foreground action to the dupe negative without the use of mattes.

The black-and-white negative being exposed only by the background illumination comes out of the camera a finished female matte. A first-generation print made from this negative will produce the male matte, which may be used directly in printing the background scene to the dupe negative. It would seem that it would be difficult to conceive of a traveling matte system that would be any simpler or more direct than the dual-film system outlined above.

In practice, however, dual-film systems are not quite as ideal or direct as is sometimes believed, since certain considerations are required in lighting the action and the backing, and in the complexities of the matte production department.

Since the color negative must not be exposed by the backing illumination, this illumination must be in the form of radiation to which the color negative is insensitive. This limits the backing illuminant to three choices: 1) Ultra-violet energy just beyond the blue end of the spectrum. 2) Infra-red energy just outside the red end of the spectrum; or 3) a band of illumination within the visible spectrum so extremely narrow that it can be removed without affecting the color rendition of the color system. Sodium light has this property.

From a practical standpoint, each of the three dual-film systems can produce excellent results with varying degrees of complexity on the set and in the matte department.

The Ultra-violet System

In the Hollywood studios, this system employs a Technicolor 3-strip camera that provides for the two negatives required.

Because lamps generally used for illuminating the foreground action radiate a substantial amount of ultra-violet (U-V), an appropriate filter must be placed on each lamp to screen out the U-V in the illumination reaching the foreground objects in the scene.

The backing, usually a translucent screen, must be capable of transmitting ultra-violet and all the lamps behind the backing must be filtered to eliminate visible light reaching the screen for best results. The ultra-violet fluorescent lamps that can be used for this purpose have a rated life of several thousand hours and require no filters.

Ultra violet light, being of a shorter wave length than visible light, will cause the photographed matte image to be slightly smaller than the color action image, requiring an enlarging compensation to be made in the printing step unless specially corrected lenses are used on the camera to offset the image reduction.

Certain transparent objects are not transparent at all to U-V light, and often the background scene does not show through as expected.

While it is theoretically possible to print the foreground photography to the dupe negative without a matte, this produces a mild veiling or fogging of dark areas in the background scene, when present color films are used, and requires the use of a light cover or female-matte to correct it.

The Infrared System

This system also employs the Technicolor 3-strip camera, filtering requirements are somewhat similar to those required for the Ultra-violet System, and for the best results, all lamps used to illuminate the foreground action require a filter to screen the infrared from the light.

Infrared filters are far more difficult to obtain than those for U-V and are many times more expensive. A U S patent (No. 2,461,127) was granted in 1949 on this system and the use of infrared filters in traveling matte photography is understood to infringe on this patent unless the proper license is obtained. Where no filters are used on the foreground lamps, an inferior matte can be obtained which requires several additional steps in the procedure in order to produce an acceptable silhouette.

In the infrared system, the backing, when illuminated by infrared radiation, should appear entirely black to the eye. Of interest here is a special black Nylon velvet material now available, which is highly reflective to infrared and makes excellent backing for this process. In use, the backing is front illuminated by unfiltered incandescent lamps, the properties of the Nylon backing material effectively cancel out the exposure potential of the visible light, making use of filters unnecessary.

As with U-V, the wave length of infrared poses a correction problem. Because infrared is of a longer wave length than visible light, unless special corrective lenses are used on the camera, the resulting matte image will be slightly oversize and must be properly reduced in the optical printing step.

The action negative may be reproduced on the dupe negative either by means of the color intermediate film or through black-and-white separations. A light female matte is generally required to prevent veiling of the background scene.

The Sodium Lamp System

This, the last of the important dual-film traveling matte systems, as originally proposed, requires the use of didymium filters on the foreground action lamps and on the camera. And as with the preceding systems, the Technicolor 3-strip camera is employed.

The background, against which the foreground action is played and photographed, is opaque and painted a special yellow color and is illuminated from the front by sodium-vapor lamps similar to those used in some street lighting systems. These lamps have a rated life of 1,000 hours and the illumination is of very narrow range, near the middle of the visible spectrum.

The lamps used to illuminate the foreground action require no filters.

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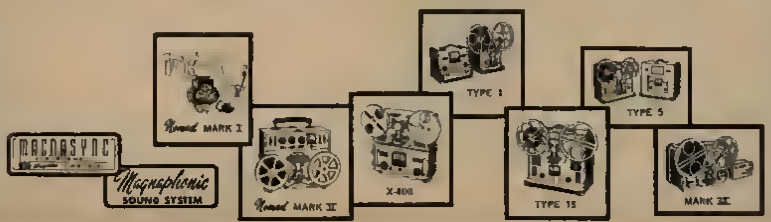
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But there is a special prism used in the camera which directs nearly all of the foreground action light to the color negative, resulting in normal exposure.

The sodium illumination from the backing is reflected by the prism to the black-and-white matte film and therefore does not affect the color negative. Since the black-and-white matte negative receives only the sodium lamp illumination, the image registered on the film ultimately appears as a silhouette. With this system, the matte image is unaffected by the wavelength of the illumination and is the same size as the color image, requiring no reduction or enlarging. Also, most transparent objects within the scene reproduce normally.

While all three dual-film systems are capable of rendering excellent results, the sodium lamp system offers the advantage of requiring no filters on either foreground or background lamps; the matte image is the correct size; and little if any difficulty is experienced with transparent objects. ■

(To Be Continued)

REMOTE CONTROLLED CAMERA

Continued From Page 597

cially when the camera is used in the horizontal configuration. The 1,000 foot magazine provides a substantial run, an especially important feature, since the camera will be used often in situations where frequent re-loading is impractical. In the threading operation the revised film path increases the overall threading time only by a scant minute and a half.

The mechanism which drives the camera itself is a conventional CECO (Camera Equipment Co.) camera motor. Moore has given it additional capacitance in order to eliminate any motor interference that might be caused by the TV monitor used as remote viewfinder. The camera ordinarily runs on 110 volt AC, 60 cycle current — but when aircraft-mounted, it operates by means of a Carter inverter fed by two 12-volt automobile batteries. This system draws 5 amps of power at 110 volts when everything is running. The camera drive motor is augmented by a control motor that enables the governor to be remotely controlled for various filming speeds. To provide a check on the actual operating speed of the camera in terms of frames-per-second, there is a tiny generator which creates low-voltage AC current that registers on a meter at the control center. For accurate footage count in addition to the reading provided by the Veeder Root counter, there is a compact micro-switch which closes a circuit as each foot of film passes through the camera, activating a solenoid operated footage counter at the control station.

A most important aspect of this remote-control package is its use of servo motors and amplifiers. Five motors are used to remotely control all lens functions, and also the panning and tilting operations. The great advantage that servos have over selsyn motors or simple AC or DC motors, Moore explains, is that they provide exact positioning and generate great torque. Their unique positive-positioning characteristic is such that an operator can, for example, throw the zoom lens focal length control of this camera all the way over and it will set the zoom in operation, then come to a stop.

The servos virtually act as an accurate extension of the camera operator's eyes and hands. Mounted on the side of the lens itself are three servo motors, one of which controls the zooming speed. Another controls focus and a third regulates the aperture opening. In respect to pan and tilt the servos are extremely critical. They provide the camera operator with exactly the same feel in panning and tilting as if he were using a Worrall head. The direction of rotation matches that of the Worrall head exactly, which means that a cameraman who is accustomed to using conventional Hollywood equipment can sit down behind this remote camera unit and not have to learn a new direction of rotation in order to pan and tilt.

The remote controls for operating the camera are divided into groups and are positioned exactly as if the equipment were to be operated on a studio set. The camera operator is provided with standard rotary-type pan and tilt handles. He controls the on-off switch for the camera as well as the TV monitor. Indicators show when the power and servos are on, and he has a remote controlled footage counter, as described above. The three controls for the TV monitor operate exactly as on a standard home receiver (Fig. 5).

The assistant cameraman controls the zoom or selects the stationary focal length of the lens, and also regulates aperture and focus. He controls the main power source and the servos, as well as the heating elements of the camera. A separate switch permits control of the power source when a Carter inverter is used instead of conventional AC current. The assistant also controls the speed of the motor, which can be operated at any frame rate up to 32 per-second.

The system is so designed that, for use on aircraft, the camera operator and his assistant can either be separated or seated alongside one another. Each has his own TV monitor. But the set up is so flexible that, if need be, one man can control the entire system.

The ingenious viewing arrangement which Moore has worked out is the heart of the unit. The Berthiot zoom lens, which ranges in focal length from 34mm to 154mm, has a built in reflex "through-the-lens" viewing system which allows the operator to see what is being recorded on the film. To make constant *remote* reflex viewing possible at all times while the camera is running, a General Electric transistorized TV camera mounted with a relay lens, picks up the image as seen through the reflex viewing system of the zoom lens. The image is transmitted directly to a monitor, enabling the operator to see exactly what is being photographed regardless of the focal length at which the zoom is set, or the orientation of the camera mount in respect to pan and tilt. The image on the monitor precisely matches the field of the camera aperture.

The Light Meter

Mounted in front of one of the servo motors on the lens is a miniature cadmium sulphide resistance-type cell which functions as a light meter (Fig 3). The angle of view of this meter is 45 degrees, roughly matching the average field-of-view of the zoom lens. By pressing a button the operator can obtain a reading of the light available to the lens at that moment. The meter on the camera is adjustable and is in a split focal range, so that the cameraman can calibrate it with his own meter for spot checks during shooting.

The modified camera fully assembled weighs approximately 120 pounds. It can either be hung beneath the wing or fuselage of an aircraft or mounted on an upper surface; but no matter

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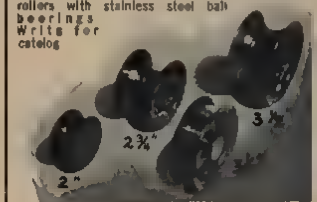
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what the position, the camera can be tilted up or down 45 degrees. For shooting his upcoming film Moore will mount the camera just above center, under the fuselage of a war surplus Douglas B 26 bomber, purchased for the purpose The camera mount is attached to the pan and tilt mount by means of four vibration shock-absorbers. It is critically important, Moore points out, to have the camera completely shock-insulated while it is airborne so that definition is not destroyed by medium range frequency vibration

Dome-enclosed

The entire package will be enclosed in a clear plastic dome, a true hemisphere with a 9-inch skirt around the bottom which will be secured to the aircraft. The camera may be panned and tilted inside this casing and the lens will be close enough to the plastic bubble so that any slight aberrations in the plastic will not be recorded on the film The bubble will be covered with paper as the craft takes off and rigged with a drawstring so that when the plane reaches the cool air above the "bug level," a pull on the string will tear the paper away, exposing a clean bubble ready for photography.

There are, perhaps, a dozen sequences in Moore's film in which the required excitement can only be captured by means of a camera set up such as the one he has designed In one shot, for example, a Messerschmidt comes from behind and makes a pass across the gunner's compartment The gun turrets (which, incidentally, are operational on the B 26) will be seen in the close foreground and powder charges will be set As the Messerschmidt moves overhead across the top of the camera plane the camera will film the resultant dog fight and show a large section of the fuselage, including a window, blown out by the powder charge. There is also a sequence in which the bomber attacks a convoy of trucks on the ground and destroys them The camera will be able to capture shots of great impact in this sequence as well as in several others Moore's feature film is to be photographed in Panvision Anamorphic prints of scenes shot with the remote camera will be extracted to inter-cut.

Other Uses

There are many instances in making films when positioning of the camera with operator behind it represents a considerable hazard to the operator A common example is a stampede sequence, for which normally a camera is set up in a well protected position and started and stopped remotely The drawback is that it remains a static camera in every respect It cannot pan, tilt or zoom—nor is there any way for the cameraman to see what he is getting while the scene is being shot. All he can do is trip the switch and hope for the best. Where it is feasible to mount the camera on a well-protected pedestal up high, it is possible to pan and zoom such action without endangering the operator; but for low angle shots that bring the audience into the very thick of the action, more sophisticated remote-controlled camera equipment such as Moore has developed, is needed

A blimped version could be used to advantage for filming animals at water holes or in the wilds where the scent of a human being would ordinarily frighten game away In filming dangerous materials or operations for industry the potentials of Moore's camera are at once obvious The unit's flexibility also makes it ideal for filming battle maneuvers or tracking missiles remotely In launch areas such as Cape Canaveral, where personnel are not allowed back in the area once the equipment is set-up, last minute adjustments to conform to varying photographic conditions could be made by remote control right up to the moment of blast-off. •

FLASHBACK TO YESTERYEAR



1916—Shaded by an umbrella which also kept the sun out of his camera lens, Reginald Lyons ASC shoots a scene for an early day silent comedy, which features Earl Montgomery and Joe Rock, a pair of vaudeville favorites who deserted the two-a-day circuits for a fling in the "movies."

Set is typical of the outdoor sun stages in common use in Hollywood in those days and was part of the old Vitagraph Studio on Talmadge Street in East Hollywood, since refurbished, expanded and occupied by a major TV network Adjustable scrims stretched across open top of set were used to control and diffuse the daylight—the only photographic illumination used. Sunlight reflectors, which might have been used effectively to throw light into the set, had not yet come into general use.

Vitagraph made all its own cameras in those days, and Lyons is using one of them to shoot the scene. It was in the Vitagraph camera shop that Lyons got his start in the movie industry in 1910, helping build and test the cameras. It was at Vitagraph that Lyons met his wife, Isabel, who also worked there, and married her a year later. This year the Lyons celebrated their 52nd wedding anniversary "Reggie' is retired and presently lives in Hollywood with his wife.

"SEVEN DAYS IN MAY"

Continued From Page 587

angle lens encompassed the ceiling, the pool and three walls. The takes turned out exceptionally well on the screen considering the unconventional lighting we were compelled to use.

We encountered a somewhat similar situation when filming on the White House interior sets, where Director Frankenheimer staged a number of scenes that included three walls plus the ceiling. One of these was the President's office and study, completely oval in shape and high ceilinged, which precluded the possibility of hanging lights on any wall or utilizing parallel lighting. Here we had to blend false covering pieces into the wall surfaces to conceal the strategically placed lighting units.

Unique Night Exterior

In one of the very first sequences filmed for the picture, an interesting lighting situation was encountered. This was a night exterior of an aircraft landing strip, and was staged on a seldom used paved road running off into infinity in the Arizona desert. In the darkness of night, however, and with the aid of ten arc lights, we made it look like an authentic airfield of conventional proportions. To give the scene the familiar aspect of a landing strip, we placed photoflood lamps at intervals along both sides of the paved highway for some 300 feet. The action, covering the length of the strip, was lit with arcs placed alongside it. Effectively blocking off this lighting from the camera were a number of black gobos, 20 feet in height. The illusion thus created was perfect, not only as viewed from behind the camera but also to an alert Army fighter pilot, who swooped overhead just at dusk. After (I imagine) hastily consulting his maps, and deciding there was a secret, un-marked air base somewhere in the desert, he disappeared over the horizon, presumably making frantic calls on his radio. Ten minutes later a large U.S. Army helicopter arrived and made half a dozen passes over our "strip," coming lower and lower on each pass. At this altitude the pilot must have seen our camera set-up, trucks and other equipment. He windmilled away, leaving us with the comforting thought that, at least, our fly boys are on the job!

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location, often filmed in temperatures up to 126 degrees, our problems were alleviated by the use of four "Sprytes," a new all-purpose, off-the-highway vehicle now used by the U S Army. With broad tank-type tracks these machines can operate over snow, ice, marshland and deep sand Originally developed by the Engineering Department of Utah State University, they will soon be available for farming, surveying and, I sincerely hope! — for motion picture locations. They open up areas previously inaccessible, and provide a smooth camera platform for running shots. In helping move heavy equipment over otherwise impassable sand, and towing stalled trucks and cars, they proved invaluable. (They also look most sporty on screen!)

Final exteriors, filmed in Washington, D.C., called for a riot outside the White House, interiors at Dulles International Airport, plus a "stolen" shot at the Pentagon. Here let me explain that "Seven Days in May" concerns a plot by high-ranking generals to take over the government by force, not exactly a theme to endear us to the Pentagon occupants

Filming Picket Parade

Our White House riot scenes, filmed with a timing that was almost too coincidental to be accidental, took place the very morning after President Kennedy's announcement of the proposed A-bomb disarmament treaty with Russia—exactly the story point of our film.

Some 300 "pickets" paraded up and down in front of the White House. We had, of course, obtained all necessary police clearances, but faced the possibility of having our filmic riot interrupted by a real demonstration. Secret Service men notified us that 400 members of the Brotherhood of Railroad Workers were on their way to stage a real demonstration, and could conceivable (and forcibly) demand priority.

For filming this sequence, with speed imperative, we used five cameras—the regular Mitchell and four hand-held Arriflexes Operators of the Arriflex cameras were placed strategically in the melee for dramatic closeups. Even if these operators were picked up by the Mitchell, they would merely look like regular newsreel cameramen covering the riot. Frankenheimer personally donned a cap, and carrying a news photographer's camera, was right in the thick of the action, the better to exhort the rioters to greater violence. In less than four hours we completed this sequence, originally scheduled for two days, and came away with some 6000 feet of exciting film.

Cloak-and-Dagger Operation

Final scenes, with Kirk Douglas and Edmund O'Brien, were filmed at Dulles Airport after we had "stolen" shots of Douglas entering and leaving the Pantagon at the Joint Chiefs of Staff entrance. This proved to be somewhat of a cloak-and dagger operation.

Douglas, arriving by plane from New York, was to be spirited past the press at the airport, rushed into the rest room to change from civvies into his Marine Corps uniform, then sped to the Pentagon. A concealed camera, mounted behind the tailgate of a station wagon, would precede Douglas' car to the Pentagon. Our rendezvous with the camera car missed fire—we were supposed to pick it up behind a Washington restaurant, but went to the wrong restaurant. However, our cortege finally reached the Pentagon—camera car, Douglas' car, and another car with the still photographer.

Douglas hopped out of his car, entered the Pentagon, paused a few seconds, then exited, all of which was duly recorded by the hidden camera. Meanwhile the still man, trying to look like a misplaced tourist, snapped furtive still pictures As soon as we had our shots, the film magazine was yanked off and tossed into the limousine so that if the station wagon were halted by guards, our film would be safe. The only minor problem was one of etiquette—two separate enlisted men saluted Douglas in his Marine Corps uniform. But as an ex-Navy lieutenant of World War II, Douglas returned the salutes with commendable nonchalance.

At Dulles Airport we filmed at night, when traffic was at a minimum The action called for work in the lobby, a mammoth structure whose length and breadth would make it ideal for holding the next Army-Navy game indoors. Our major problem here was reflection as fully 80 percent of the "walls" are glass. Lighting this required six truckloads of electrical equipment and more than half a mile of cable.

Key To Cinematic Progress

Earlier I mentioned the compensation that comes to a cinematographer from a compatible association with the

director of a picture. Summing up this assignment, I think it was the unlimited opportunity it afforded for developing new and different concepts in photography that particularly appealed to me. Over the years, a cinematographer works with a great many directors—each of different temperament, talent, ability and attitudes. In John Frankenheimer I found the ideal associate as a director—one who, after you've completed the picture, makes you feel that you have made a substantial personal contribution to its success. And that is as it should be; for the art of cinematography progresses when the desire to achieve new visual concepts is genuinely encouraged. ■

SKYDIVERS

Continued From Page 589

within 1 foot of the required distance. Cameramen Buquor wore a uniform of distinctive color so that the subjects could spot him quickly and maneuver into predetermined positions.

Eastman Color 35mm Negative was used entirely and exposure problems were worked out in advance by director of photography Leslie Kovacs and "jumping photographer" Bob Buquor.

Light readings were taken in advance on the ground when the shots were being set up, and additional readings were taken from the aircraft immediately prior to each jump. Positioning of the cameraman in relation to the jumpers was especially important to avoid backlighting when the camera was pre-set for front lighting. Obviously, it was impossible for the photographer to change the exposure setting once he jumped from the plane.

Another factor that had to be considered was getting proper exposure of the ground or scenery that was an important part of the film. This was especially difficult when shooting at sunset, several times the sun would be below the horizon at ground level, while the jumpers floating down from above were in bright sunlight. Differences between ground exposure readings and "jump altitude" readings varied by two and sometimes three f/stops. Rather than try and depend on an overall exposure setting, the cameraman set the exposure to suit the particular part of the script being shot, concentrating either on the jumpers or on the ground.



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Leigh Hunt said more than 3500 feet of air-to-air film was shot, with actual spoilage amounting to less than 15 feet! Shots from the ground were photographed with a 35mm Arriflex camera, also powered by a Dynamax power pack, supplying the footage required to provide continuity in the film.

During all of the shooting only two major problems were encountered. One was the first time that Bob Buquor saw the helmet with the camera mounted on it. Getting him to make the first jump with the Eyemo rigged on the helmet took quite a bit of persuasion, and possibly even a well placed foot when he was standing in the door of the plane at 10,000 feet! The other problem was encountered during the filming of six free-falling parachutists with Mt. Ranier about 20 miles distant serving as background. According to Hunt, Buquor was so enthralled with the beautiful vista spread before him that he descended beyond the 2,000-foot parachute opening point looking like a tourist on a sightseeing bus in Paris. Suddenly at 700 feet he realized where he was and opened his parachute with only a few feet to spare. This, he reflected, is one kind of assignment where a daydreaming cameraman daydreams only once!

Leigh Hunt's resulting production of "Holiday In Silk"—so named because of the colorful silk parachutes—runs 40 minutes on the screen. Planned as a documentary and theatrical short subject, Hunt will enter the film in a number of international film festivals, and later will submit it for nomination for an Academy Award. In all, six weeks were required to stage and photograph the picture, which involved a total of 50 parachute jumps and 10,000 miles of flying. Leslie Kovacs was Director of Photography and did most of the shooting on the ground with the Arriflex. Bob Buquor contributed the air-to-air photography and Hunt, besides being the producer and director of the film, acted as chief jumper.

*Pilot Reddick lost his life sometime afterward in a freak takeoff crash of his plane.

REWARDING ASSIGNMENT

Continued From Page 595

the lee of the island to find smooth water, he waited. But the smooth ride continued, until finally he gave the word to get ready.

A 10-K beam of light knifed the midnight blackness over Lake Huron. Then more lights were switched on. The smaller boat was tied to the camera barge. The sound men stretched out the fish pole mike boom and filming began. The action shot here involved the two rebel leaders of the story as they raced their speedboat across a lake in Eastern Europe, away from government troops in hot pursuit and toward the unexpected climax of the film.

One of the remarkable features of "Music at Midnight" is that some of the actors were not portraying fictional characters, but themselves. One man had fought the Russians and the Germans as part of the underground in his native Estonia before emigrating to North America.

In the film he was given the part of underground commando, assigned to "cover" the parachute-speedboat escape of his boss, rebel leader Martin Landau. As he backs down the jetty, spraying government troops with his sten gun, he is shot dead and falls ten feet into the 55-degree waters of Lake Huron, at midnight. Needless to say, this was a one take shot.

This gun battle and others not described were shot night-for-night, using illumination supplied by Brutes, 170's and 10-K's. Because the action covered a wide area in these scenes, and the lights were to be used as reflected from the water, Director of Photography Rosson switched from Plus-X to Double-X for camera negative. During the rest of the filming he used Plus-X, exposed at 200 foot candles at f:4. The Double X was used at 50 foot-candles, varying between f:2.8 and f:4.

The illumination was directed not at the landing craft and the speedboats, but at the water immediately beside the various craft. Footcandle readings were then made of the reflection from the water and not from the lights. By lighting in this manner, the rippled effect of water on hulls and superstructures was emphasized.

Filming action among shell-scarred ruins of a Central European capital which had been erected on a sound stage only 120 feet in length was a major obstacle for Rosson and his camera crew, for it presented the difficulty of framing scenes for the 1.85-to-1 aspect ratio without taking in area above the backdrop plus a few low-hanging 10-K lamps. To move in with the camera would result in losing vital foreground detail, and to move back and use a different lens would put the camera operator with his back against the wall; besides, Rosson had elected to shoot the scene with a 28mm lens. The problem was ultimately solved by shooting through an archway which served to screen the unwanted top area of the background of the set.

The Studio And Equipment

According to Rosson, the MRA studio owns a reasonable amount of up-to-date lighting equipment, including two Mole-Richardson Brutes and two 170's. Power for these lamps is supplied by a mobile gas generator that provides 800-amps of DC. This generator is also used, when required, to power a four-blade Ritter wind machine. Additional set lighting equipment includes 10-K's and Inky-Dinks, which are operated on AC, and a number of ColorTran units which are used chiefly for location shooting.

The sound department is equipped to take care of any recording needs. Equipment includes RCA and Westrex 35mm magnetic film recorders, a range of Altec and RCA studio microphones, and a Mole-Richardson mike boom perambulator.

The cameras are all Arriflex. Rosson used an Arri 35mm in a 400-foot blimp. Lenses, all Cooke Speed Panchros except one, range from 35mm to 100mm focal length. The other lens is a 28mm wide-angle Schneider. For zoom shots there is a 35mm-to-135mm Angenieux which is mounted on a second 35mm Arriflex. A CECO heavy-duty friction-type TV camera head is

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generally used with the cameras. The camera mount most frequently used in production is a Moviola crab dolly. A medium-size motorized crane is also available. This has a range of elevation for the camera from 32 inches to a maximum of 20 feet, and it can travel on its own power supplied by self-contained storage batteries at anywhere from 1 to 20 miles per hour, forward or reverse.

"To my amazement," said Hal Rosson, "I found the MRA layout one of the finest and most modern equipped motion picture studios outside of Hollywood. Nothing has been overlooked to make film production a smooth professional operation. It was a delight to work there," he concluded. ■

BEHIND THE CAMERAS

Continued From Page 572

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GENERAL SERVICE STUDIOS

ROBERT MORENO, "Adventures of Ozzie & Harriet"*

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HARRY WOLF, ASC, "The Beverly Hillbillies"*, "Petticoat Junction"*

GOLDWYN STUDIOS

ELLSWORTH FREDRICKS, ASC, "The Young Lovers" (Tigertail Prods.) with Peter Fonda and Sharon Hugueny. Samuel Goldwyn, Jr., producer-director.

LLOYD AHERN, ASC, "The Fugitive"*.

INDEPENDENT

JEAN TOURNIER, "The Train" (Widescreen, shooting in France) with Burt Lancaster and Jeanne Moreau. Arthur Penn, director.

ANDREW LASZLO, "One Potato, Two Potato" (Bewelco Pictures, Inc.; shooting in Ohio) with Barbara Barrie and Bernie Hamilton. Larry Peerce, director.

LINWOOD DUNN, ASC, "The Long Corridor" (Leon Fromkess Prod.) Special Effects.

LINWOOD DUNN, ASC, JAMES GORDON, ASC, "It's A Mad, Mad, Mad, Mad, World" (Stanley Kramer U.A.) Special Effects.

LEONARD HIRSCHFIELD, "Ladybug, Ladybug!" (UA release; shooting in Penna.) with Jane Connell and William Daniels. Frank Perry, producer-director.

ARTHUR ARLING, ASC, "The Dubious Patriots" (Corman Prod.; UA, P'Vision; shooting in Yugoslavia) with Stewart Granger and Rod Vallone. Roger Corman, director.

JOE MACDONALD, ASC, "Invitation to a Gunfighter" (Stanley Kramer Prod; UA Release; P'vision & Eastmen color) with Yul Brynner and Janice Rule. Richard Wilson, director.

STANLEY CORTEZ, ASC, "Nightmare in the Sun" with Arthur O'Connell and John Derek. Marc Lawrence, director.

HASKELL WEXLER, "The Best Man" (Miller-Turman Prod., UA release) with Henry Fonda and Cliff Robertson. Franklin Schaffner, director.

GAYNE RESCHER, ASC, "The Troublemaker" (Seneca-Ozymandias Prods.) with Tom Aldredge and Joan Darling. Theodore J. Flicker, director.

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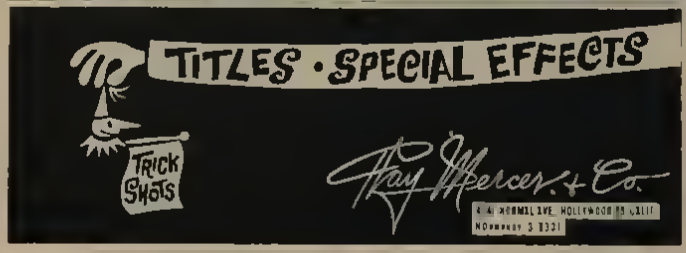
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JULIAN TANNENBAUM, "Block Like Me" (Film Features Inc., shooting in Md.) Carl Lerner, director.

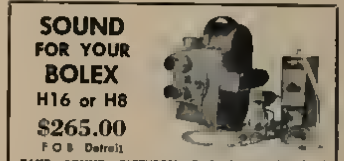
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EMMETT BERGHOLZ, "Combat"*.

DALE DEVERMAN, ASC, "The Eleventh Hour"*.

LAMAR BOREN, "Rhino" (Ivan Tors Prod; Metrocolor; shooting in Africa) with Harry Guardino and Robert Culp Ivan Tors, producer director

GEORGE CLEMENS, ASC, ROBERT PITTACK, ASC, "Twilight Zone"*.

WILLIAM SPENCER, ASC, "The Richard Boone Show"*.

HARKNESS SMITH, ASC, "Dr Kildare"*.

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GEOFFREY UNSWORTH, "Becket" (Hal Wallis Prod.; P'Vision & Eastman color, shooting in London) with Richard Burton and Peter O'Toole. Peter Glenville, director.

JOE MACDONALD, ASC, "The Carpetbaggers" (P'Vision T'color) with George Peppard and Alan Ladd. Edw. Dmytryk director.

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SAM LEAVITT, ASC, "Shock Treatment" (Arcola Prod.) with Stuart Whitman and Carol Lynley. Denis Sanders, director

LEON SHAMROY, ASC, "What a Way to Go!" (Apjac-Malibu, C'Scope, DeLuxe Color) with Shirley MacLaine and Paul Newman. J. Lee Thompson, director

Continued On Page 616

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Continued From Page 614

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JAMES VAN TREES, ASC, "The Phil Silvers Show"*.

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JOHN WARREN, ASC; JACK MARQUETTE, "McHale's Navy"*.

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LIONEL LINDON, ASC, IRVING LIPPMAN, ROBERT HAGER, "Challenge Golf"*

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RAY RENNAHAN, ASC, "Arrest and Trial"*.

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WILLIAM CLOTHIER, "A Distant Trumpet" (P'vision; T'color, shooting in Flagstaff, Ariz.) with Troy Donahue and Suzanne Pleshette. Raoul Walsh, director.

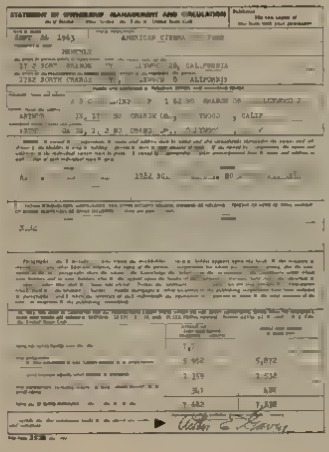
CHARLES LAWTON, ASC, "Ensign Pulver" (P'Vision-T'color) with Robert Walker, Jr. and Millie Perkins. Joshua Logan, producer director.

HARRY STRADLING, ASC, "My Fair Lady" (Super P'vision, 70 T'color) with Audrey Hepburn and Rex Harrison. George Cukor, director.

ROBERT SURTEES, ASC, "Kisses for my President" (WB Pearlayne Prod.) with Fred MacMurray and Polly Bergen. Curtis Bernhard, producer director.

ROBERT HOFFMAN, "Temple Houston"*

BURT GLENNON, "Sunset Strip"*.



STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION

AMERICAN CINEMA

SEPT. 1963

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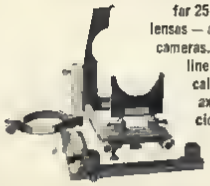


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